



# FLIGHT



First Aero Weekly in the World.

Founder and Editor : STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 367. (No. 1, Vol. VIII.)

JANUARY 6, 1916.

Weekly, Price 1d.  
Post Free, 1½d.

## Flight.

Editorial Office : 44, ST. MARTIN'S LANE, LONDON, W.C.

Telegrams : Truditur, Westrand, London. Telephone : Gerrard 1828.

Annual Subscription Rates, Post Free.

United Kingdom ... 6s. 6d. Abroad ... 11s. 0d.

### CONTENTS.

	PAGE
Editorial Comment :	
1916 ...	1
Roll of Honour ...	2
British Air Services ...	4
Honours for the R.N.A.S. ...	5
Constructional Details ...	6
Royal Aero Club, Official Notices ...	9
From the British Flying Grounds ...	10
A Mid-Air Battle ...	11
Aircraft Work at the Front. Official Information ...	14
A "Popular" Type Aeroplane Design ...	16
Armchair Reflections. By "The Dreamer" ...	18
Eddies. By "Æolus" ...	19
Aircraft and the War ...	22
Lighter than Air ...	23
Models ...	25
Legal Intelligence ...	26

## EDITORIAL COMMENT.



THE announcement in our last issue of 1915 that, commencing with January 6th, the price of "FLIGHT" would be one penny per week instead of threepence, appears to have struck a very distinct note of satisfaction in many unexpected directions. Communications which have reached us upon the change are very encouraging, as demonstrating that the reduction to the lower price is indeed "a long felt want." It is a matter for surprise that an apparently so small a matter to the individual should make so great a difference, but it is evidently a fact that has to be accepted, that one penny is a matter of indifference to the million—whilst three pennies is an expenditure for quite serious consideration when it is recurrent at weekly intervals. We are, therefore, all the more satisfied that we have been able to give the advantage to our supporters now that the commercial position of the industry has been placed upon a sufficiently solid foundation as to ensure its steady

development. Although events have moved so rapidly in the past stages of Aviation Development, we have the most sanguine confidence that the future has even greater surprises in store in the same direction. The more the work of aircraft is studied and realised, the more certain is it to our mind that the controlling power in this world of ours in the years to come, will be that country which possesses, without fear of dispute, the supremacy of the air. And it is up to the British Empire to see that she is in that position, as she now is supreme on the sea, against the time, when it comes, for enforcing respect to British ideals of justice and freedom for the world's nations, large and small, should that freedom ever be challenged again by such another shameful combination as the Central European powers. The year nineteen hundred and sixteen will undoubtedly see even more advance in the compelling influence of aircraft than the year just past has evolved. There are no limits in our view to the enormous proportions to which in years to come the expansion of the navigation of the air will rise. That the present year will produce some slight reflections of what the future may have in store for aviation is equally certain.

Under existing conditions all efforts will and should be directed to the perfecting and increasing of aircraft for offensive and defensive purposes—and the pity of it. But anything that tends to bring about more efficient and more stable machines cannot but help leave a grand legacy in its wake for the craft that will naturally follow in the coming days of peace. The daily growing experience gained from the ever-increasing demands made upon our Flying Services, however one may deplore the means, must necessarily help forward the art of navigation of the air, when in calmer times a more extended attention can be given to the sporting and commercial sides of the newly-born industry.

Merely by way of inviting a more widespread and individual interest in this direction, elsewhere in the pages of "FLIGHT" this week is commenced a series of articles upon the Design of a "Popular" Type Aeroplane. In these articles, the endeavour will

be to show that aviation need not be the highly costly pastime, which at present most people insist upon attributing to it. There is no reason why in the years to come the utilisation of the freedom of the air should not be as popular and as widespread as automobilism has become. The period of ridicule of the motor car in its earlier stages was much more extended than has been the case with the aeroplane. But then the European hostilities have forced facts upon the world and broken down prejudices and indifference which would otherwise have taken almost decades to bring to the same point of view. And thereby hangs a tale.

In some quarters prejudice is so ingrained that fifty years of rubbing in actualities, such as have been brought to light in favour of the extension of aviation for naval and military purposes, would hardly be sufficient to elicit a growl of grudging praise and approval.

These folk who insist upon seeing nothing worthy of notice in anything that has not been as an axiom during their time of service, are the real drags upon progress and expansion. It is to be hoped that a much more spirited policy will be encouraged in the immediate future, so that the full weight of the power of aircraft in this war may be apparent. Fortunately the growth of the Air Service *cannot* be stopped, whatever clogs are put into its way. It can only be retarded. That this should be so just now, however, is very unfortunate, as if ever there were a time for a more broadened conception of the power lying latent in aircraft to shorten the war, that time is surely now. It requires bold and drastic measures and energy of a supreme character to bring the full possibilities of air-war to fruition, but if an effective combination of all efforts could be brought about, the results we believe would be epoch-making.

Nineteen-sixteen will, we believe, lay the foundation stone for a British Air Service, a service which shall years hence become greater even than our all-powerful Navy. For the moment this attempt at looking into the future may appear to be fantastic, but we believe most earnestly that we are in no way over-estimating the pinnacle to which the navigation of the air will attain. It will, of course, mean the establishment of the Third Service, which, however, by force of its superior power to strike a vital blow at any moment, will presently claim its position as being the First Service in the defense and in offense on behalf of our Empire.

That such expansion means money and plenty of it goes without saying, but the time is not so very far distant when the grant to the British Air Service will not be thought of, as it was in the past, in six-figure dribblets, but in millions and in millions ranging in due course into the nine-figure column. Let our powers that be see to it that they are not forestalled in this connection. Britain is an inviting spot for spreading disaster from the air.

As yet we are in a position far short of anything like security from an offensive on a grand scale, and the sooner this weakness in our armour can be adjusted and we can be also assured of being able to make the grand offensive ourselves the easier will be the minds of those who have visions of things. Such are the thoughts which force themselves upon us as we now enter upon 1916, with the warring of the nations still at its zenith and with our enemies being persistently forced to look for new outlets for their diabolical ingenuity for the purpose of overcoming the strangling pressure which is month by month firmly growing more insistent. Relief from this tension *may* come *via* the air. It is our earnest hope that the initiative of that relief will be from the side of Britain and her Allies.



## THE ROLL OF HONOUR.

THE Secretary of the Admiralty announces the following casualties:—

Under date December 28th:

**Slightly Wounded.**

Flight Sub-Lieutenant Richard B. Munday, R.N.

Under date December 29th:

**Slightly Injured.**

Flight Sub-Lieutenant Cicel R. Terraneau, R.N.

The following casualties in the Expeditionary Force have been reported from General Headquarters:—

Under date December 23rd:

**Wounded.**

1845 Sergeant G. J. Lusted, Royal Flying Corps.

Under date December 24th:

**Wounded.**

Second Lieutenant L. Moss, A.S.C. and R.F.C.

5266 2nd Class Air-Mechanic A. Wright, Royal Flying Corps.

Under date December 28th:

**Wounded.**

Second Lieutenant G. Alchin, R.F.A., attached R.F.C.

**Missing.**

Captain G. T. Porter, R.F.A. and R.F.C.

Under date December 29th:

Second Lieutenant M. Head, Royal Flying Corps.

Second Lieutenant G. L. Pitt, Royal Flying Corps.

Undated:

**Previously reported Missing, now reported Prisoners of War.**

Lieutenant D. W. Grinnell-Milne, R. Fus. and R.F.C.

Lieutenant V. M. Grantham, Royal Flying Corps.

Captain C. C. Strong, London R. (T.F.), 13th Bn. (Princess Louise's Kensington).

The following casualties in the Indian Forces have been officially reported from General Headquarters of the Expeditionary Force:—

Undated:

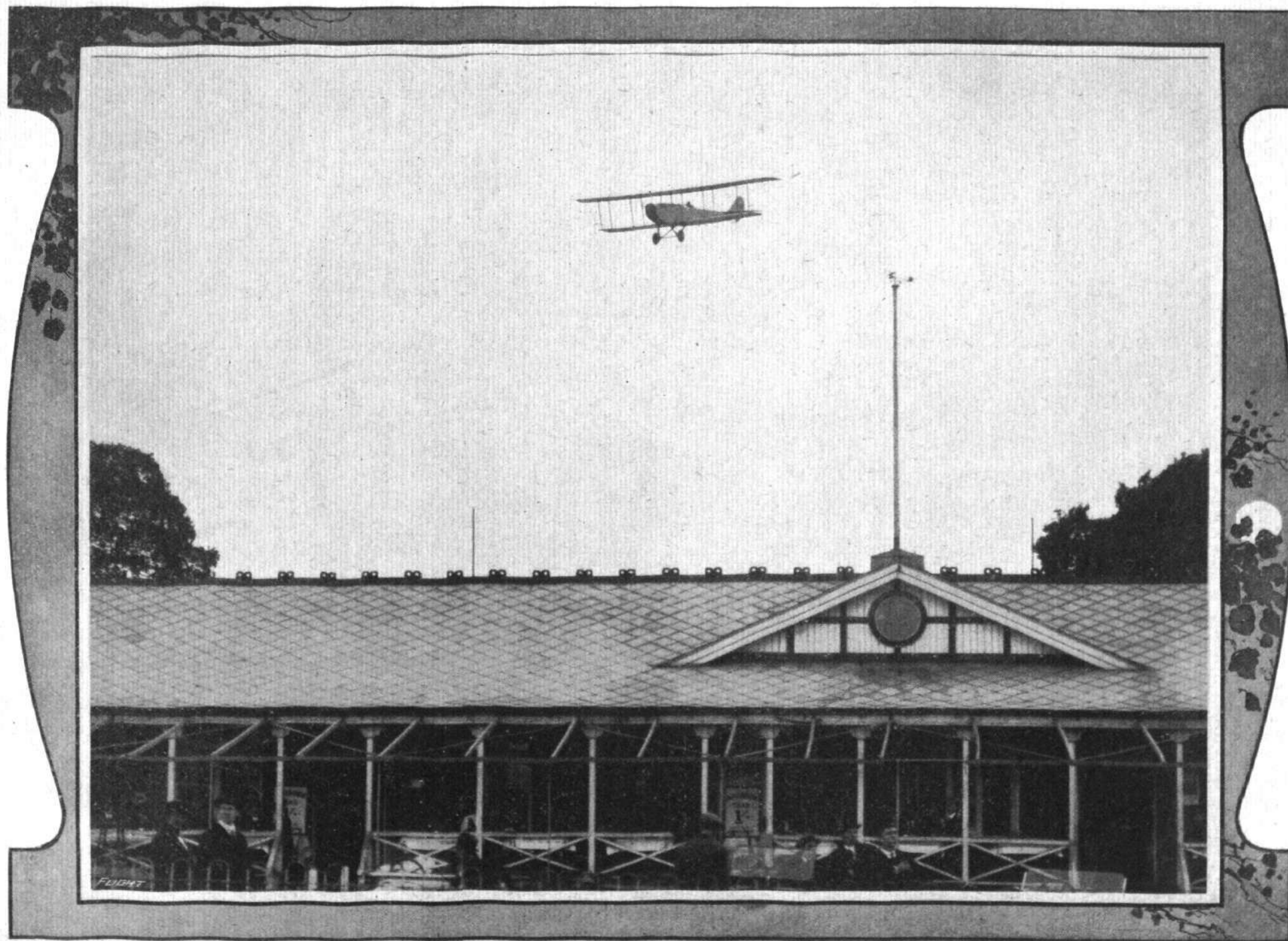
**Missing.**

Second Lieutenant D. F. Cunningham-Reid, Indian Army Reserve of Officers, attached R.F.C.

Lieutenant E. J. Strover, 3rd Brahmins, attached R.F.C.



JANUARY 6, 1916.



A finishing glide at Hendon Aerodrome by Mr. Sydney Pickles, on one of the Curtiss machines.

# The British Air Service

"PER ARDUA AD ASTRA"

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

## Royal Naval Air Service.

THE following appeared among the Admiralty announcements of the 29th ult. :—

Temporary Sub-Lieut. (R.N.V.R.) E. Ball entered as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of Dec. 28th, and appointed to "President," additional, for R.N.A.S.

Chief Petty Officer (R.N.) S. H. V. Fill granted a temporary commission as Lieutenant (R.N.V.R.), with seniority of Dec. 26th, and appointed to "President," additional, for R.N.A.S.

The following have been granted temporary commissions as Sub-Lieutenants (R.N.V.R.): F. W. Mardock, with seniority of Dec. 27th; D. R. W. Thompson and A. M. Tidey, with seniority of Dec. 30th, and all appointed to "President," additional, for R.N.A.S.

The following appeared among the Admiralty announcements of the 31st ult. :—

Temporary Warrant Officer, Second Grade, J. W. Alcock promoted to the rank of Flight Sub-Lieutenant, for temporary service. To date Dec. 29th.

G. S. Gray and M. G. Dover entered as Flight Sub-Lieutenants, on probation, for temporary service. To date Dec. 6th.

The following promotions appeared among the New Year Honours published in a special supplement to the *London Gazette* on December 31st :—

*Squadron-Commanders Promoted to the Rank of Wing-Commander.*—Robert Gordon, Robert Hamilton Clark-Hill, Charles Russell Jekyl Randall, and Richard Bell Davies, D.S.O.. Dated Jan. 1st, 1916.

*Flight-Commanders Promoted to the Rank of Squadron-Commander.*—Frederick William Bowhill, Arthur Bruce Gaskell, Ennis Tristram Ratcliffe Chambers (now Acting Squadron-Commander), Cecil Francis Kilner, D.S.O., Edmund Digby Maxwell Robertson, Reginald Lennox George Marix, D.S.O., Francis Kennedy McClean (for temporary service) (now Acting Squadron-Commander), and John Tulloch Cull, D.S.O. (now Acting Squadron-Commander). Dated Jan. 1st, 1916.

*Flight-Lieutenants Promoted to the Rank of Flight-Commander.*—John Marten Rush Cripps, Thomas W. Elsdon, Herbert Stanley-Adams (now Acting Flight-Commander), George Miller Dyott (for temporary service) (now Acting Flight-Commander), Robert Hilton Jones, Cuthbert Morgan Murphy (now Acting Flight-Commander), Douglas Claude Strathern Evill (now Acting Flight-Commander), John Philip Wilson, D.S.C. (now Acting Flight-Commander), James Douglas Maude, Ernest Victor Samuel Wilberforce, John Dunville (for temporary service), Charles Frederick Pollock (for temporary service). Dated Jan. 1st, 1916.

*Flight Sub-Lieutenants Promoted to the Rank of Flight-Lieutenant.*—Charles George Verner, Benjamin Travers, John Conrad Peter Wood, Arthur Charles Teesdale, Eustace Fletcher Moyes, Arthur Quilton Cooper (for temporary service) (Acting Flight-Lieutenant), Frederick Whittington Gamwell (now Acting Flight-Lieutenant), Robert Dymond Gladman Sibley, Lawrence Pratt Openshaw, Cuthbert Everard Brisley (for temporary service), William Geoffrey Moore, George Hancock Reid, Thomas Vaughan Lister, Thomas Francis Netterville Gerrard, Oswald Noel Walmesley, James Edward Baker Maclean, John Daniel Newberry, Thomas Hinshelwood, Frank Thomas Digby, Bertram Denison Kilner, Ralph Squire Sorley, John Thearsby Banks-Price (for temporary service), Frank Besson, Charles William Fairfax Morgan, Robert Hudson Routledge, Christopher Eric Wood, Eustace de Courcy Hallifax, Colin Johnson, Dudley Ware, Alexander Barton, James Brian Patrick Ferrand, John Stanley Fleming Morrison, Richard Cecil Hardstaff, Frederick William Lucas, Leslie Hewitt Hardstaff, Royce Gustave André Baudry, Arthur Frederick Foy Jacob, Guy William Cranfield (for temporary service), William Charles Michie (for temporary service), Gilbert Formby Smylie, Frank Fowler, Charles Walter Graham (for temporary service), Alexander Robb Cox, Colin Temple MacLaren, Cecil Douglas Morrison, John Robert Davison (for temporary service), Edward Stewart Cripps (for temporary service), Arthur Hamilton Chandler (for temporary service), Taunton Elliott Viney and Ernest Arthur Oliphant Auldjo-Jamieson. Dated Jan. 1st, 1916.

The following appeared among the Admiralty announcements of the 3rd inst. :—

Temporary Surgeon R. K. Shaw, M.B., to "Wildfire," additional, to be lent for duty at R.N.A.S. Training Establishment.

Flight Sub-Lieut. G. Donald, to the "Engadine." Jan. 2nd.

Temporary Lieut. S. J. V. Fill (R.N.V.R.), to "Empress." Jan. 2nd.

The following have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of Dec. 16th, and appointed to "President," additional, for R.N.A.S.: B. N. Harrop, G. G. Avery, S. V. Trapp and J. A. Glen.

## Royal Flying Corps (Military Wing).

The following appeared in a supplement to the *London Gazette* issued on the 29th ult. :—

*Attached to Headquarter Units.*

*Brigade Commander.*—Brevet Lieut.-Col. William S. Brancker, R.A., and to be Temporary Brigadier-General whilst so employed. Dec. 18th, 1915.

*Brigade Major.*—Capt. Charles M. Longmore, R.A., and to remain seconded. Dec. 17th, 1915.

*Establishments.*

*Equipment Officers and to be Temporary Captains whilst so Employed.*—Second Lieut. Temporary Lieut. C. E. Prince, Westmorland and Cumberland Yeomanry (T.F.); Nov. 29th, 1915. Lieut. H. A. Oxenham, Special Reserve, from an Assistant Equipment Officer; Nov. 30th, 1915.

*Flying Officers.*—Capt. J. U. Kelly, Duke of Edinburgh's (Wiltshire Regt.), and to remain seconded; Temporary Lieut. G. Klingsenstein, A.S.C., and to be transferred to the General List; Dec. 1st, 1915. Temporary Lieut. N. C. Sampson, attached 2nd Dragoon Guards (Queen's Bays), and to be transferred to the General List; Second Lieut. C. M. B. Chapman, Buffs (East Kent Regt.), and to be seconded; Second Lieut. G. W. Roberts, R.F.A., Special Reserve; Dec. 2nd, 1915. Capt. C. T. Maclean, Royal Fusiliers (City of London Regt.), Special Reserve, and to be seconded; Lieut. (Temporary Capt.) G. V. Rice, R.F.A. (T.F.); Lieut. C. H. Gardner, R.F.A. (T.F.); Lieut. D. Grinnell-Milne, Royal Fusiliers (City of London Regt.), Special Reserve, and to be seconded; Temporary Second Lieut. C. H. Tancred, R.A., and to be transferred to the General List; Second Lieut. L. H. T. Sloan, Queen's Own Cameron Highlanders, and to be seconded; Temporary Second Lieut. B. E. Baker, Rifle Brigade (Prince Consort's Own), and to be transferred to the General List; Temporary Second Lieut. L. J. Pearson, R.E.; Second Lieut. J. W. Toone, Royal Irish Regt., and to be seconded; Second Lieut. F. E. Goodrich, Special Reserve; Dec. 7th, 1915.

*Balloon Officers.*—Lieut. C. H. Stringer, 5th (Royal Irish) Lancers, and to be seconded; Second Lieut. (Temporary Lieut.) H. B. Martindale, East Surrey Regt. (T.F.); Dec. 2nd, 1915. Second Lieut. J. W. Jardine, Special Reserve; Dec. 4th, 1915. Temporary Capt. W. Lambert, Royal Fusiliers (City of London Regt.), and to be transferred to the General List; Temporary Lieut. W. B. Hellard, General List; Dec. 8th, 1915.

*Assistant Equipment Officers.*—Second Lieut. R. A. Courtney, Special Reserve; Oct. 25th, 1915. Temporary Capt. E. B. Palmer, A.S.C.; Lieut. H. R. Raikes, Buffs (East Kent Regt.), Special Reserve; Nov. 17th, 1915. Second Lieut. H. J. C. Smith, Special Reserve; Nov. 26th, 1915. Second Lieut. N. S. Percival, Special Reserve; Nov. 28th, 1915. Second Lieut. A. W. Cott, Special Reserve; Second Lieut. M. A. Shepstone, Special Reserve; Second Lieut. R. S. Witchell, General List; Second Lieut. W. J. Hewitt, Special Reserve; Second Lieut. T. L. F. Burnett, Special Reserve; Second Lieut. E. W. Havers, Special Reserve; Second Lieut. H. L. Conner, Special Reserve; Second Lieut. C. G. Smith, Special Reserve; Second Lieut. F. H. Songhurst, Special Reserve; Second Lieut. W. T. W. Wartnaby, Special Reserve; Second Lieut. G. McKerrrow, Special Reserve; Nov. 29th, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 30th ult. :—

*Wing-Commanders.*—From Squadron-Commanders, and to be Temporary Lieutenant-Colonels whilst so employed: Capt. (Temporary Major) Gordon S. Shephard, Royal Fusiliers (City of London Regt.); December 10th, 1915. Capt. (Temporary Major)



G. W. P. Dawes, Princess Charlotte of Wales's (Royal Berkshire Regt.); Dec. 12th, 1915.

**Squadron-Commanders.**—From Flight-Commanders, and to be Temporary Majors whilst so employed; Dec. 7th, 1915: Capt. Rutter B. Martyn, Duke of Edinburgh's (Wiltshire Regt.); Capt. Henry Le M. Brock, Royal Warwickshire Regt.; Lieut. (Temporary Capt.) Louis A. Strange, Dorsetshire Regt. Capt. John G. Hearson, R.E.; Dec. 17th, 1915.

**Flight-Commanders.**—From Flying Officers: Capt. H. Petre, Commonwealth Military Forces; Nov. 22nd, 1915. Capt. (Temporary Lieut. in Army) E. W. Powell, Unattached List, Territorial Force; Dec. 8th, 1915. And to be Temporary Captains whilst so employed: Temporary Second Lieut. H. B. R. Grey-Edwards, R.A.; Nov. 22nd, 1915. Temporary Second Lieut. B. P. Greenwood, General List; Nov. 28th, 1915. Dec. 3rd, 1915: Lieut. R. H. S. Mealing, Special Reserve; Temporary Second Lieut. E. E. Clarke, A.S.C. Second Lieut. R. E. A. W. Hughes-Chamberlain, Special Reserve; Dec. 6th, 1915. Dec. 8th, 1915: Second Lieut. W. D. S. Sanday, Special Reserve; Lieut. L. W. Learmount, Special Reserve. Lieut. R. Balcombe-Brown, R.F.A., Special Reserve; Dec. 12th, 1915. Lieut. G. L. P. Henderson, Special Reserve, Dec. 15th, 1915.

**Flying Officers.**—Dec. 10th, 1915: Temporary Second Lieut. A. H. W. Tollemache, R.E., and to be transferred to the General List; Temporary Second Lieut. T. A. Oliver, Royal Welsh Fusiliers, and to be transferred to the General List. Dec. 14th, 1915: Temporary Second Lieut. R. H. Anderson, Rifle Brigade (Prince Consort's Own), and to be transferred to the General List. Lieut. A. R. S. Clarke, Dorset Regt., and to be seconded; Temporary Second Lieut. F. H. Furness-Williams, R.A., and to be transferred to the General List. Temporary Second Lieut. H. S. Powell, General List. Second Lieut. H. A. B. Robb, Special Reserve; Dec. 15th, 1915.

**Supplementary to Regular Corps.**—Second Lieut. (on probation) Hugh A. B. Robb is confirmed in his rank.

To be Second Lieutenants on probation: Laurence Minot; Oct. 28th, 1915. Nov. 17th, 1915: Alexander T. Watson, John V. Nash, Leslie Porter; Nov. 22nd, 1915. John T. Spittle; Nov. 23rd, 1915. Nov. 25th, 1915: William G. Stewart, Lessel F. Hutcheon. William A. Spratt; Nov. 26th, 1915. Charles L. H. Hicks; Dec. 2nd, 1915. David W. S. Paterson; Dec. 8th, 1915. William J. M. Tomson; Dec. 28th, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 1st inst.:

## HONOURS FOR THE R.N.A.S.

IN a supplement to the *London Gazette* issued on December 31st, it was announced: The King has been graciously pleased to approve of the grant of the Victoria Cross to Squadron-Commander RICHARD BELL DAVIES, D.S.O., R.N., and of the Distinguished Service Cross to Flight Sub-Lieutenant GILBERT FORMBY SMYLLIE, R.N., in recognition of their behaviour in the following circumstances:—

On November 19th these two officers carried out an air attack on Ferrijik Junction. Flight Sub-Lieutenant Smyllie's machine was received by very heavy fire and brought down. The pilot planed down over the station, releasing all his bombs except one, which failed to drop, simultaneously at the station from a very low altitude. Thence he continued his descent into the marsh. On alighting he saw the one unexploded bomb, and set fire to his machine, knowing that the bomb would ensure its destruction. He then proceeded towards Turkish territory. At this moment he perceived Squadron-Commander Davies descending, and fearing that he would come down near the burning machine and thus risk destruction from the bomb, Flight Sub-Lieutenant Smyllie ran back and from a short distance exploded the bomb by means of a pistol bullet. Squadron-Commander Davies descended at a safe distance from the burning machine, took up Sub-Lieutenant Smyllie, in spite of the near approach of a party of the enemy, and returned to the aerodrome, a feat of airmanship that can seldom have been equalled for skill and gallantry.

It was also announced that His Majesty the King had been graciously pleased to give orders for the appointment of the undermentioned officers to be Companions of the Distinguished Service Order:—

Captain EDWIN HAROLD BARR, R.M.A.

For services with the Royal Marine Artillery Anti-Aircraft Brigade in France.

Attached to Headquarter Units.

**Brigade Major.**—Capt. Bertram C. Fellows, retired pay, Indian Army, from a Wing Adjutant, Royal Flying Corps; Dec. 18th, 1915.

Establishments.

**Flight-Commanders.**—From Flying Officers; Dec. 7th, 1915: Capt. Robert G. Cherry, R.A.; Capt. Harry F. A. Gordon, York and Lancaster Reg. And to be Temporary Captains whilst so employed: Lieut. Sydney W. Smith, R.A.; Second Lieut. (Temporary Lieut.) W. H. Primrose, Princess Louise's (Argyll and Sutherland Highlanders), (T.F.); Second Lieut. (Temporary Lieut.) John E. A. Baldwin, 8th (King's Royal Irish) Hussars; Second Lieut. Reginald H. Carr, Special Reserve. Temporary Lieut. F. J. Powell, General List; Dec. 15th, 1915. Lieut. Evelyn P. Graves, R.A.; Dec. 17th, 1915.

**Flying Officers.**—Dec. 6th, 1915: Temporary Lieut. J. Clisdal, General List; Second Lieut. F. W. Brett, Special Reserve. Dec. 9th, 1915: Second Lieut. A. W. Kilgour, Special Reserve; Temporary Second Lieut. J. E. Pike, Durham L.I., and to be transferred to the General List.

**Supplementary to Regular Corps.**—Second Lieut. (on probation) Arthur W. Kilgour is confirmed in his rank.

The following appeared in a supplement to the *London Gazette* issued on the 3rd inst.:

**Memorandum.**—To be Temporary Second Lieutenant: Air-Mechanic John L. Miles, from Royal Flying Corps; Dec. 14th, 1915.

**Supplementary to Regular Corps.**—Second Lieutenants (on probation) confirmed in their rank: Francis W. Brett and James W. Jardine. To be Second Lieutenants (on probation); Nov. 15th, 1915: Wilfrid H. Tolhurst and Peter Tremlett. Dec. 13th, 1915: Kenneth E. Page and Francis R. Hudson.

### Central Flying School.

THE following appeared in a supplement to the *London Gazette* issued on the 1st inst.:

**Instructor.**—Lieut. (Temporary Capt.) H. R. Nicholl, Special Reserve, a Flight Commander, Military Wing, and to retain his temporary rank whilst so employed, vice Lieut. (Temporary Capt.) J. E. Tennant, Scots Guards. Dec. 12th, 1915.

The following appeared in the *London Gazette* of the 4th inst.:

**Staff Captain.**—Lieut. A. J. L. Scott, Sussex Yeomanry, T.F., from a Flying Officer, Royal Flying Corps, vice Lieut. E. P. Graves, R.A. Dec. 17th, 1915.

Flight Sub-Lieutenant JAMES BRIAN PATRICK FERRAND, R.N.

On November 28th, 1915, accompanied by First Class Air-Mechanic Oldfield as gunner, Flight Sub-Lieut. Ferrand attacked a hostile seaplane, which was accompanied by three more seaplanes and a destroyer off the Belgian coast, and brought it down by gunfire into the water, where it immediately sank. He then attacked the destroyer, and only abandoned the attack after coming under heavy shell fire both from the destroyer and the shore batteries of Westende.

Flight Sub-Lieutenant TAUNTON ELLIOTT VINEY, R.N.

For his services on November 28th, 1915, when, accompanied by le Lieutenant en second de Sinçay as observer, he destroyed a German submarine off the Belgian coast by bombs dropped from an aeroplane.

### To be an Honorary Companion of the Distinguished Service Order.

Le Lieutenant en second COLLEY SAINT-PAUL COMTE DE SINÇAY, attached to No. 1 Wing, Royal Naval Air Service.

For his services in connection with the destruction of a German submarine by bombs dropped from an aeroplane on November 28th, 1915.

The King has further been graciously pleased to give orders for the award of the Distinguished Service Cross to the undermentioned officer:—

Acting Lieutenant HAROLD ROGER LAMBERT, R.M.

For services with the Royal Marine Artillery Anti-Aircraft Brigade in France.

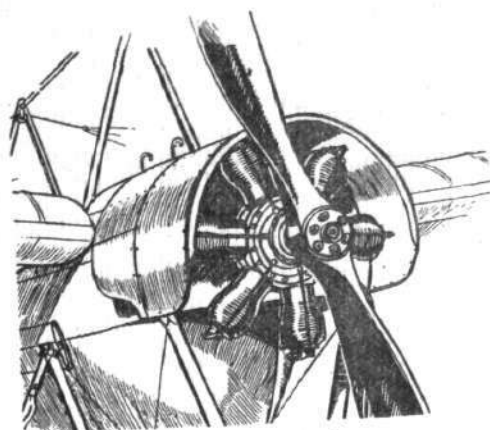
The following awards have also been approved:—

### To receive the Distinguished Service Medal.

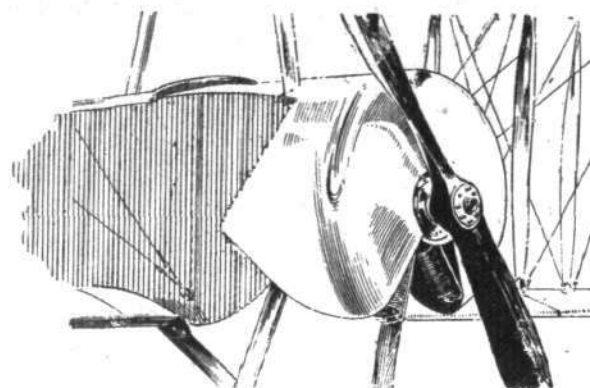
1st Class Air-Mechanic GEORGE THOMAS OLDFIELD.

Officier-marinier FRANÇOIS BILLOIS, pilote d'avion, Dunkerque Naval Aeroplane Squadron.

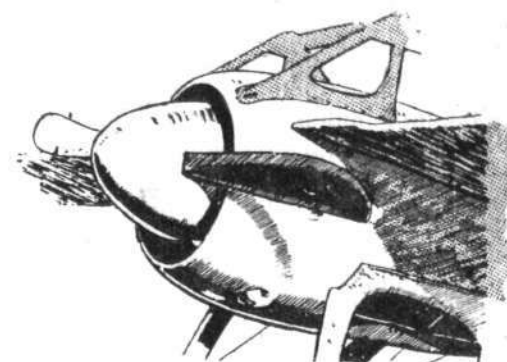
## CONSTRUCTIONAL DETAILS.—XII.



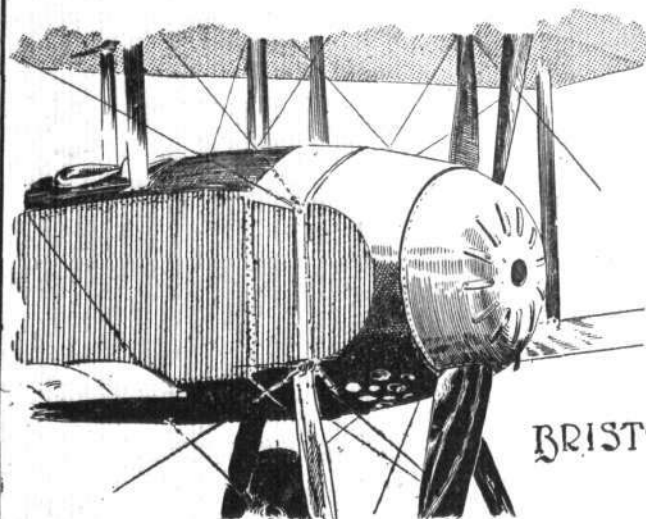
HANDLEY-PAGE



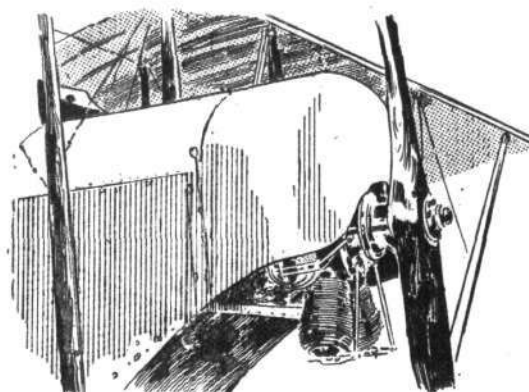
E.A.C.



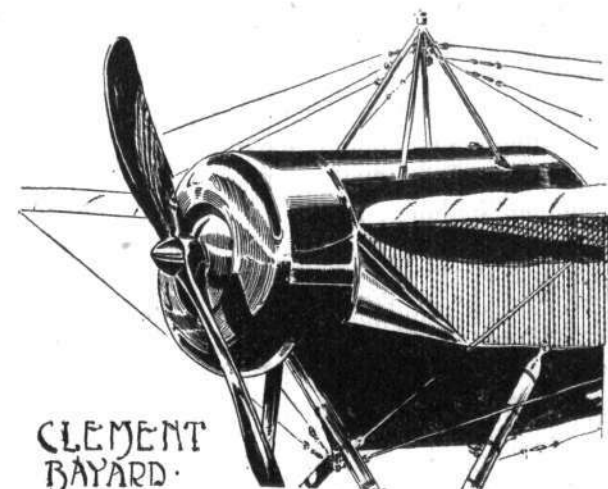
DEPERDVSSIN.



BRISTOL



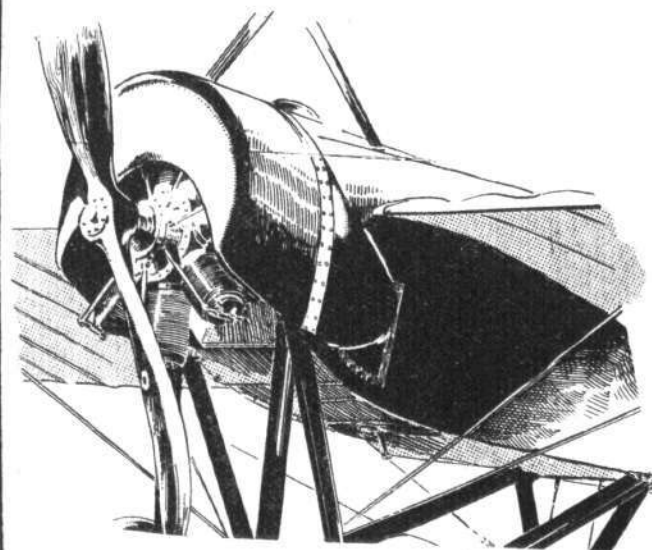
CAUDRON



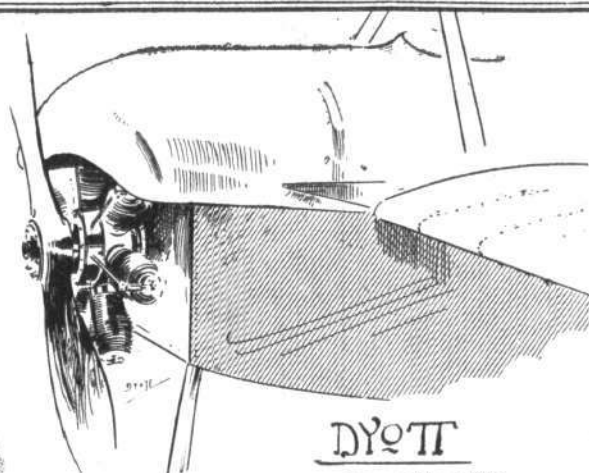
CLEMENT  
BAYARD.

Various engine mountings and housings.—For text see page 8.

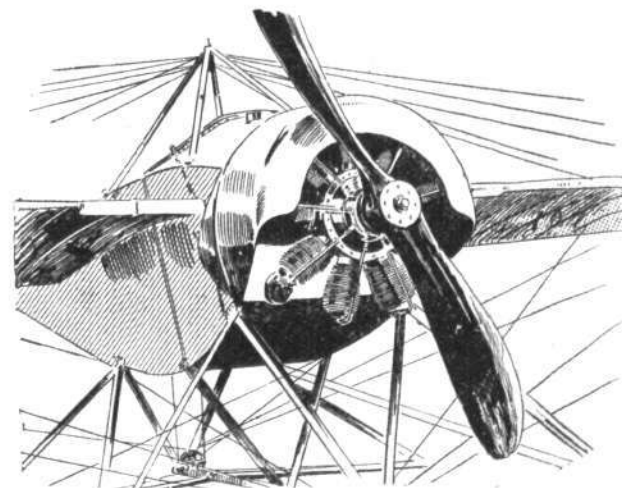




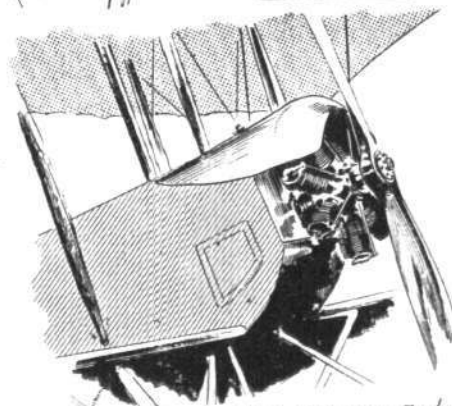
MORANE SAULNIER



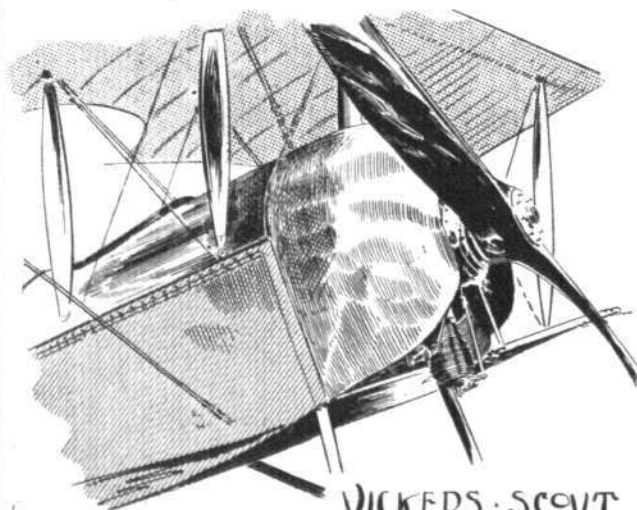
DYER



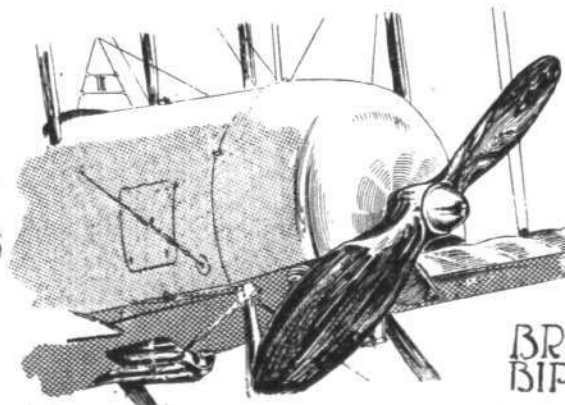
NEUPORT



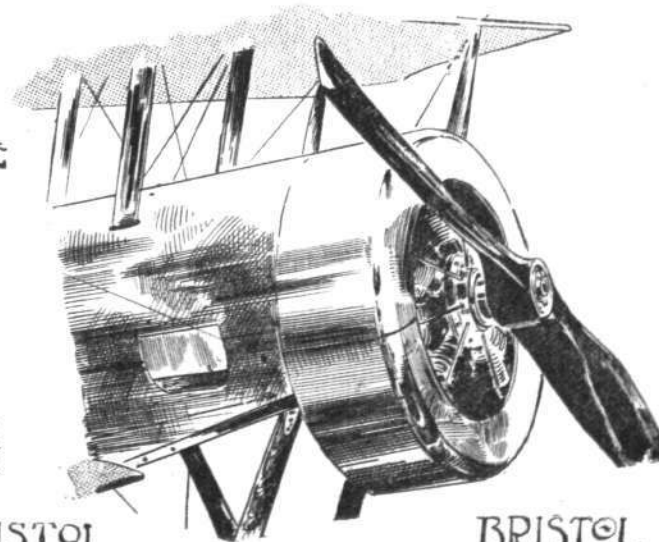
GRAHAME WHITE



VICKERS SCOUT



BRISTOL  
BIPLANE.



BRISTOL  
SCOUT

Various engine mountings and housings. (Continued.)—For text see page 8.

## CONSTRUCTIONAL DETAILS.—XII.



**I**NASMUCH as the engine forms such a vital part of an aeroplane, the various methods employed for mounting and housing it are of sufficient importance to merit inclusion in this series of constructional details. In order to facilitate reference, we have attempted to classify the different types according to their characteristics, and as the air cooled rotary engine is, or at least was until comparatively recently, in a vast majority, this type will be dealt with first. Sub-dividing the various forms of mounting of a rotary engine according to where they are placed in the machine, there are two forms of mounting for tractors, one in which the engine is supported on two bearers but is overhung, *i.e.*, there is no support in front of the crankcase, and one having one bearer in front and one behind the engine. When the engine is placed in the rear, it is almost invariably overhung.

When overhung in the nose of a machine, the bearers usually take the form of pressed steel frames, of which the front bearer forms a capping plate over the nose of the *fuselage*, and takes most of the weight of the engine, while the rear one supports the rear end of the induction pipe, and is, as a rule, provided with means for alignment. In order to lighten the engine frames these have frequently openings cut in them, the edges of which are bent over to form webs, which help to stiffen the frame against bending strains. In some cases the engine plates are not pressed out of a single sheet of steel, but are built up of parts that are riveted or bolted together. For instance, the front bearer of the Morane-Saulnier monoplane is quite an elaborate structure built up in this fashion, the result being very strong, and at the same time light.

Placed right out in front as it is on a tractor machine, where it receives, it is true, the maximum cooling, but where on the other hand it offers a great amount of head resistance, the problem of reducing the head resistance and at the same time admitting enough air to keep the rotary engine at its maximum temperature is one of some considerable difficulty. The result must inevitably be somewhat of a compromise, and some highly ingenious forms of housing have been designed with this object in view.

In its simplest form the cowl consists of a sheet metal shield, usually aluminium, placed over the top of the engine and only sufficiently large to prevent too great an amount of oil from being blown back in the pilot's face. In the sketches of the Dyott and Grahame-White cowls will be found two examples of this simple form of shield, while on another page is shown the cowl of the old Handley-Page monoplane, which is a strip of aluminium surrounding the upper half of the engine, but being quite open in front. While this type of shield is reasonably effective in collecting the oil thrown out by the engine, it leaves the nose of the *fuselage* and the crankcase exposed to the wind pressure, and in order to reduce the head resistance presented by these parts more elaborate cowls have been designed.

Although the Nieuport machines are as a rule fitted with double bearings for the engine, this firm has occasionally turned out machines with the engine overhung, as, for instance, the seaplane exhibited at the last Olympia Aero Show. The cowl, it will be seen from the accompanying sketch, surrounds the upper half of the engine and turns down over part of the upper cylinders.

A somewhat similar housing is employed on the Caudron biplane when fitted with a rotary engine. In the Morane-Saulnier monoplane the cowl itself is similar to the two last mentioned, but it is fitted at the sides with wings extending back along the sides of the *fuselage*, the object of which is to catch the oil that would otherwise be blown back along the sides of the body. When the body of the machine is narrower than the overall diameter of the engine, which is frequently the case, the manner in which the cowl merges into the flat sides of the body is of considerable importance, and one which might with advantage be investigated more extensively. In the Bristol biplane that was exhibited at the last Paris Aero Salon, the cowl enclosed the upper half of the engine, leaving all the lower cylinders exposed. The rounded sides of the cowl were made to merge very gradually into the flat sides of the body by fitting the latter with aluminium covering in front, which was at first of the same curvature as the cowl but flattened out towards the rear until it met the flat sides of the body somewhere near the pilot's seat.

The Vickers scout shown at Olympia had a cowl which also covered in the upper portion of the engine, but in shape it was somewhat different to the others, being slightly more pointed and therefore possibly offering a little less resistance. On the biplane built by the Eastbourne Aviation Co. the cowl almost totally enclosed the engine with the exception of a narrow opening at the bottom.

Which of the forms of engine housing described and illustrated above is the most efficient from the point of view of low head resistance and sufficient cooling is difficult to say, but modern tendency would appear to be towards the simpler form in which only part of the engine is covered in. That there are designers who believe that a more effective form is possible is shown by the remaining of our sketches, which illustrate various ways of totally enclosing the engine.

When the little fast Bristol scouting biplane was first introduced it had a cowl of the enclosed upper half type. This was in later models altered to one surrounding the engine entirely on the sides, but leaving the central portion round the propeller shaft open. It was found, we believe, that the exhaust gases had a tendency to affect the cowl for a space of several inches, through the arc, in fact, through which the exhaust valve was open. As the cowl is considerably greater in diameter than the body of the machine, it projects some distance below the bottom of the *fuselage*, thus allowing the exhaust gases to escape. An aluminium covering to the sides of the body gradually carries the curve of the cowl into the flat sides of the body. From the speed attained by the Bristol scouts, it would appear that from the point of view of head resistance this type of cowl is highly satisfactory.

Yet a different type of housing will be seen in the sketch of the Clement-Bayard. Here the main cowl covers the engine in entirely, but air is admitted through an opening in front, which is again partly closed by a hemispherical nose piece in the manner shown. The Deperdussin racing monoplane of Gordon-Bennett fame had a very large and rather pointed nose piece revolving with the propeller, while the engine was enclosed in a casing provided with holes for the egress of exhaust gases. The last of our sketches shows the housing of the engine on the Bristol biplane. Air is admitted through the louvres in the nose piece.



# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## Aviators' Certificates.

THE following Aviators' Certificates have been granted:—

- 2188 Lieut. Charles Darrell Merrett (51st Infantry Regt.) (Bristol Biplane, Central Flying School, Werribee, Australia). Oct. 20th, 1915.
- 2189 Lieut. Roderick Ross (34th A.E.) (Bristol Biplane, Central Flying School, Werribee, Australia). Oct. 20th, 1915.
- 2190 Lieut. Eric Glendower Roberts (48th Infantry) (Bristol Biplane, Central Flying School, Werribee, Australia). Oct. 20th, 1915.
- 2191 Lieut. Charles James Brookes, R.A.G.A. (Bristol Biplane, Central Flying School, Werribee, Australia). Oct. 20th, 1915.
- 2192 Lieut. Eric Roy Moeley (35th Australian Engineers) (Bristol Biplane, Central Flying School, Werribee, Australia). Oct. 20th, 1915.
- 2193 Lieut. Alfred William Leslie Ellis (64th Infantry Regt.) (Bristol Biplane, Central Flying School, Werribee, Australia). Oct. 20th, 1915.
- 2194 Lieut. Lawrence James Wackett (Australian Permanent Forces) (Bristol Biplane, Central Flying School, Werribee, Australia). Oct. 20th, 1915.
- 2195 Second Lieut. Victor John Whitaker (3rd Lincolnshire Regt.) (Maurice Farman Biplane, Military School, Shoreham). Dec. 13th, 1915.
- 2196 Second Lieut. Harry Turner Shaw (Loyal North Lancashire Regt.) (Maurice Farman Biplane, Military School, Shoreham). Dec. 13th, 1915.
- 2197 Flight Sub-Lieut. Alfred Milner Hughes, R.N.A.S. (Maurice Farman Biplane, Central Flying School, Upavon). Dec. 16th, 1915.
- 2198 Eric Blake Harvey (Maurice Farman Biplane, Central Flying School, Upavon). Dec. 17th, 1915.
- 2199 Flight Sub-Lieut. Donald Ernest Harkness, R.N.A.S. (Caudron Biplane, Royal Naval Flying School, Eastchurch). Dec. 17th, 1915.
- 2200 Lieut. Reginald Henry Marshall (3rd Northamptonshire Regt.) (Maurice Farman Biplane, Military School, Shoreham). Dec. 17th, 1915.
- 2201 Lieut. Hamish Strathy MacKay, R.G.A. (Maurice Farman Biplane, Military School, Shoreham). Dec. 17th, 1915.
- 2202 Edward Fenner Allen (Maurice Farman Biplane, Military School, Brooklands). Dec. 19th, 1915.
- 2203 Harold Hartley Baron (Maurice Farman Biplane, Military School, Brooklands). Dec. 19th, 1915.
- 2204 Charles Hurd Howell (Maurice Farman Biplane, Military School, Brooklands). Dec. 19th, 1915.
- 2205 Cecil Arthur Lewis (Maurice Farman Biplane, Military School, Brooklands). Dec. 19th, 1915.
- 2206 Lionel Alec Campbell Helbert (Maurice Farman Biplane, Military School, Brooklands). Dec. 19th, 1915.
- 2207 Second Lieut. John Humfreys Parry (3rd Buffs) (Maurice Farman Biplane, Military School, Shoreham). Dec. 20th, 1915.
- 2208 Second Lieut. Richard Malcolm Sissett Shepherd (4th Royal Irish Regt.) (Maurice Farman Biplane, Military School, Shoreham). Dec. 20th, 1915.
- 2209 Second Lieut. Guy Herbert Boisragon Dent (2/1st Herts Yeomanry) (Maurice Farman Biplane, Military School, Shoreham). Dec. 20th, 1915.
- 2210 Sergt. Francis George Stanley Williams (Royal North Devon Hussars) (Maurice Farman Biplane, Military School, Ruislip). Dec. 20th, 1915.
- 2211 Cyril Hart Collins (Maurice Farman Biplane, Military School, Birmingham). Dec. 20th, 1915.
- 2212 Second Lieut. Fredrick John Terrell (8th Somerset Light Infantry) (Maurice Farman Biplane, Military School, Birmingham). Dec. 20th, 1915.
- 2213 Flight Sub-Lieut. Hugh Reston Aird, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Dec. 22nd, 1915.
- 2214 Ernest Duveen (Maurice Farman Biplane, Military School, Ruislip). Dec. 22nd, 1915.
- 2215 Maurice Medaets (Belgian Subject) (L. and P. Biplane, London and Provincial School, Hendon). Dec. 22nd, 1915.
- 2216 Flight Sub-Lieut. Frederick Somerville Wroth Savill Onley, R.N.A.S. (Beatty-Wright Biplane, Beatty School, Hendon). Dec. 22nd, 1915.
- 2217 Flight Sub-Lieut. George Reginald Moody, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Dec. 22nd, 1915.
- 2218 William Thomas Warren, Jun. (L. and P. Biplane, London and Provincial School, Hendon). Dec. 28th, 1915.
- 2219 Second Lieut. Christopher Monkton (Maurice Farman Biplane, Military School, Farnborough). Nov. 22nd, 1915.
- 2220 Second Lieut. James Reginald Herbert (Maurice Farman Biplane, Military School, Farnborough). Dec. 2nd, 1915.
- 2221 Second Lieut. Alfred Denison Pearce (12th Royal Warwickshire Regt.) (Maurice Farman Biplane, Military School, Birmingham). Dec. 9th, 1915.
- 2222 Second Lieut. Archibald Laurie Findlay (Seaforth Highlanders) (Maurice Farman Biplane, Military School, Thetford). Dec. 13th, 1915.
- 2223 Second Lieut. Herbert Lloyd Chadwick (16th Royal Warwickshire Regt.) (Maurice Farman Biplane, Military School, Thetford). Dec. 13th, 1915.
- 2224 Lieut. Harold Evans Hartney (28th Battn. Canadians) (Maurice Farman Biplane, Military School, Thetford). Dec. 13th, 1915.
- 2225 Second Lieut. Philip Hunt (2/1st Shropshire Yeomanry) (Maurice Farman Biplane, Military School, Thetford). Dec. 14th, 1915.
- 2226 Second Lieut. Henry Maurice Talbot-Lehmann (3rd Essex Regt.) (Maurice Farman Biplane, Military School, Thetford). Dec. 17th, 1915.
- 2227 Flight Sub-Lieut. William Hocking, R.N.A.S. (Maurice Farman Biplane, Royal Naval Air Station, Chingford). Dec. 18th, 1915.
- 2228 Flight Sub-Lieut. George William Biles, R.N.A.S. (Maurice Farman Biplane, Royal Naval Air Station, Chingford). Dec. 18th, 1915.
- 2229 Second Lieut. Edward William Wise Rebbeck (13th King's Royal Rifle Corps) (Maurice Farman Biplane, Military School, Thetford). Dec. 19th, 1915.
- 2230 Second Lieut. Victor William Harrison (13th Royal Fusiliers) (Maurice Farman Biplane, Military School, Thetford). Dec. 19th, 1915.
- 2231 Second Lieut. Norman Brearley (3rd The King's Liverpool Regt.) (Maurice Farman Biplane, Military School, Thetford). Dec. 20th, 1915.
- 2232 Second Lieut. George Douglas Fletcher Keddie (1st Bn. London Rifle Brigade) (Maurice Farman Biplane, Military School, Thetford). Dec. 20th, 1915.
- 2233 Second Lieut. Leslie Oakes Crowther (9th Royal West Kent Regt.) (Maurice Farman Biplane, Military School, Shoreham). Dec. 20th, 1915.
- 2234 Lieut. Roland James Mounsey (Maurice Farman Biplane, Military School, Farnborough). Dec. 20th, 1915.
- 2235 Second Lieut. Vivian Llewellyn Andersson (4th Argyll and Sutherland Highlanders) (Maurice Farman Biplane, Military School, Thetford). Dec. 20th, 1915.
- 2236 Second Lieut. Lile Frederick Coulman, R.G.A. (Maurice Farman Biplane, Military School, Thetford). Dec. 20th, 1915.
- 2237 Second Lieut. Alfred Owen Shalders (2/1st Surrey Yeomanry) (Maurice Farman Biplane, Military School, Thetford). Dec. 20th, 1915.
- 2238 Second Lieut. Reginald Walter Le Gallais (Maurice Farman Biplane, Military School, Birmingham). Dec. 28th, 1915.
- 2239 Edward Ronald Yates (Grahame-White Biplane, Grahame-White School, Hendon). Dec. 28th, 1915.
- 2240 Victor Marcel Charles Barrois de Sarigny (Maurice Farman Biplane, Military School, Birmingham). Dec. 28th, 1915.
- 2241 Second Lieut. Reginald Arthur Stubbs (4th Royal Munster Fusiliers) (Maurice Farman Biplane, Military School, Shoreham). Dec. 5th, 1915.
- 2242 Lieut. Henry Vivian Acland (48th Battn. C.E.F.) (Maurice Farman Biplane, Military School, Norwich). Dec. 9th, 1915.
- 2243 Second Lieut. Robert Horne Sievwright (Royal Inniskilling Fusiliers) (Maurice Farman Biplane, Military School, Birmingham). Dec. 28th, 1915.

- 2244 Robert Kilpatrick Muir (Maurice Farman Biplane, Military School, Ruislip). Dec. 28th, 1915.  
 2245 Flight Sub-Lieut. George Leigh Hartgill, R.N.A.S. (Maurice Farman Biplane, Royal Naval Flying School, Eastchurch). Dec. 29th, 1915.  
 2246 Second Lieut. Charles Walter Hyde, R.G.A. (Maurice Farman Biplane, Military School, Birmingham). Dec. 30th, 1915.  
 2247 Second Lieut. Arthur Lionel Gordon Kidd (Maurice Farman Biplane, Military School, Birmingham). Dec. 30th, 1915.
- AMERICAN CERTIFICATES.  
 364 John Galpin (Wright Biplane, Wright School, Dayton, Ohio). Nov. 24th, 1915.  
 365 Basil D. Hobbs (Wright Biplane, Wright School, Dayton, Ohio). Dec. 2nd, 1915.  
 366 James Lindsay Gordon (Wright Biplane, Wright School, Dayton, Ohio). Dec. 2nd, 1915.  
 367 William Edgar Robinson (Wright Biplane, Wright School, Dayton, Ohio). Dec. 7th, 1915.

## Aeronaut's Certificate.

The following Aeronaut's Certificate has been granted :—  
 58 Second Lieut. Henry George Bond (9th The Buffs). Dec. 29th, 1915.

## Extension of the Hours of Opening the Club.

The Club is now open from 9 a.m. to 10.30 p.m. each day, including Sunday.

## THE FLYING SERVICES FUND administered by THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers, and men.

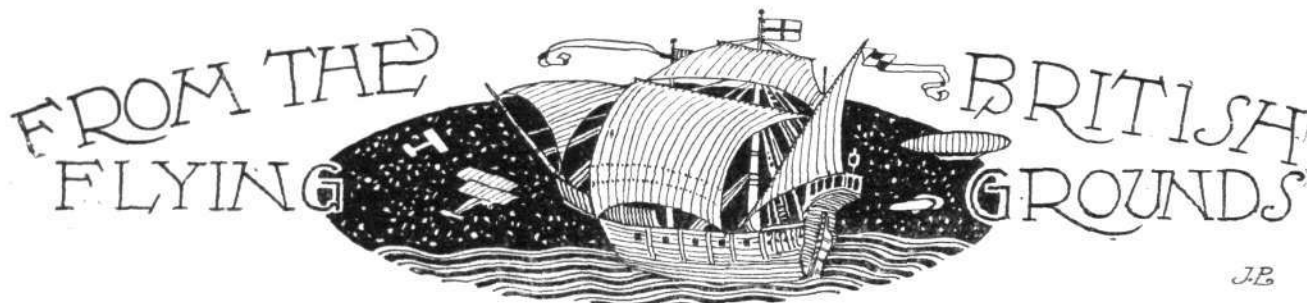
Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

## Subscriptions.

	£	s.	d.
Total subscriptions received to Dec. 23rd, 1915	10,115	10	0
Staff and Workers of Gwynnes, Ltd. (Sixth contribution) ... ..	10	3	8
Collected by E. K. Dickins ... ..	5	12	0
Proprietors of "Shell" Motor Spirit ... ..	250	0	0

Total, January 4th, 1916 ... .. 10,381 5 8

166, Piccadilly, W. B. STEVENSON, Assistant Secretary.



## London Aerodrome, Collindale Avenue, Hendon.

**Grahame-White Civilian School.**—Straights with instructor last week: Messrs. Butler, Grasset, Lewis, McClaughrie, Matthews, and Leigh. Circuits with instructor: Mr. Hallet. Circuits alone: Mr. Hughes.

*Brevet* during week: Mr. Yates.

**Grahame-White School (R.N.A.S.).**—Straights with instructor: Probationary Flight Sub-Lieuts. Aitkin,

Cook, Cuckney, Newton, Rampling, Rocket, and West. Eights alone: Probationary Flight Sub-Lieut. Horniman.

*Brevets* obtained recently: Probationary Flight Sub-Lieuts. Aird, Moody, and Ovens.

**Beatty School.**—The Beatty School was closed last week for the Christmas vacation.

**London and Provincial Aviation Co.**—Pupils doing rolling last week: Messrs. Snow, Egelstaff, Hardy, and



Nos. 1, 2, 4, and 5 are from the F.N.B. Copyright Series of Aviators.

A GROUP OF BEATTY SCHOOL PILOTS.—1. Mr. E. D. Spicer. 2. Mr. R. G. Begg. 3. Capt. A. S. M. Summers, 19th Hussars. 4. Mr. G. A. S. Nicholson. 5. Lieut. N. Browning-Paterson, R.F.A.



Creaghan. Pupils doing straights: Messrs. Hunt and Knowles.

Instructors: Messrs. W. T. Warren, M. G. Smiles, C. M. Jacques, H. Sykes, and W. T. Warren, jun. Machines in use: Four tractor biplanes.

**Ruffy-Baumann School.**—Pupils with instructors last week: Durand, Cox, De Launoit, Winter, Hamtiaux,

Pauli, Dobson, Edgar. Straights: De Launoit, Griffith, and Vernon. The last three students are now ready for their certificates, and should pass during the next fine spell of weather.

Instructors: Ed. Baumann, Felix Ruffy, Ami Baumann, and Clarence Winchester. Machines: 60 and 50 h.p. Caudron type biplanes, dual control.

## A MID-AIR BATTLE.



ON Tuesday the following letter from a flying officer in France giving a vivid description of a duel in mid-air with a German aviator, whose Fokker monoplane was brought down, the occupants being killed, appeared in the *Times*:—

"Yesterday being the first fine day, I had instructions to go up in an F.E., with 'P' as observer, to take some photographs over

going, as the numerous woods about there are absolutely bristling with 'Archies' of no mean prowess, as I can testify, having had, perforce, to sample some of their wares on many a reconnaissance of late.

"It took us roughly an hour to get up to 9,000 ft., which time we spent between — and — climbing, climbing, and climbing still. The air was pretty full of machines, it being the first fine day for some considerable time. We saw no Huns, though we afterwards heard that there were three hanging about behind their lines, and worrying a number of our fellows doing photography. Twenty to 12 found us east of —, not far short of 10,000 ft. up, and distinctly chilly.

"A biplane and a monoplane appeared east of us, the biplane leading, with ample evidence of being in a hurry, with the monoplane—which appeared to be one of our Morane type—overhauling it hands over fists. We were about 2,500 ft. above the 'buses,' and when within about a mile I got a glimpse of the monoplane's top wing. Black crosses on a white base. Good enough!

"Down went the F.E.'s nose almost vertically; 2,000 ft. we came down, while the air speed indicator went up to 160 m.p.h. and then stuck, not having been designed for the purpose of exceeding recognised limits. I expected the F.E. to fold up under the strain any moment, but she stood it like a rock. By this time the other two machines were almost vertically below us—the Hun had caught up the biplane, and was emptying his gun into it at 50 yard's range. It subsequently transpired that just at this moment he had put three bullets in the observer's arm and one through the main petrol tank, with the result that the precious fluid was pouring all over the pilot, observer, and fuselage.

"I started pulling the F.E. out of her nose dive about 200 ft. above the Hun, as too sudden a shock would inevitably have crumpled her up. The consequence was that we found ourselves above and behind the unfortunate Teuton, and within 20 yards of him. To my mind he never saw us until we opened fire. Twenty rounds of lead were planted into the back of his neck, though apparently they did not hit him. He then turned his attention to us, turning left-handed and passing directly below us. This necessitated our getting on to a perpendicular bank and doing a complete circuit to see where he'd go to. The little beggar was describing circuits round us, while we did a sort of 'Inner Circle,' conducted, of course, with a perpendicular bank; but owing to the fact that our speed was so great and that we were doing complete turns in about twice the length of our machine, the centrifugal force was so great that 'P' couldn't hold the machine-gun on its mounting; it swung down, and though the whole gun only weighs 28 lbs., he could not pull it up square.

"Things being at the moment distinctly unsatisfactory, we were not sorry to see the Hun head for home. After him we went, both diving lustily, while 'P,' more familiarly known as 'Pongo,' gave him the rest of the drum—another 28 rounds.

"I was beginning to get a little anxious, as we were getting very low and expecting 'Archie' to get us any minute, when we got him. A lucky shot found its billet and the pilot was no more. The evolutions that machine described falling 7,000 ft., with no man at the wheel, were extraordinary, viewed from above—first wheels up, then right way again, a loop, several cartwheels, a nose dive, more loops, and several turns on to and off its back, sideways, until it was lost to sight almost on the ground. Good enough!

"By this time another F.E., a Bristol scout, and two Q.c.'s had

arrived, but—fortunately for me—too late to claim a share in the *finale*. The next I remember doing was looking at my watch—12.45. The incident over, we started climbing again, as those infernal photographs had to be done. At this point the engine began to have a say in the matter, and one cylinder decided to strike. So homeward we wended our weary way. Quite an ovation on landing—the only person who wasn't cheery was the unfortunate observer of the Q.c., who entered into the commencement of the scrap. The satisfaction of knowing that the Johnny who'd pushed three holes into his right arm—considerately avoiding to touch the bone—had been properly 'strafed,' didn't bear any weight.

"The Major was delighted, as it was the first machine of this type to show up in this quarter. A number of Fokkers, as the German Moranes are called, have been giving our machines a lot of trouble down south, and it is rather thought that this one may have been a picked pilot sent up to put some more heart into the other machines working in this sector of front. For his first appearance he had certainly done remarkably well, driving off three of our machines and wounding an observer. For speed and climb, he left our machines absolutely, so he was well out of the way.

"I must say that he was the first German we have run across who put up anything like a real decent show, and our jubilation is tinged with regret at the loss of a very gallant fellow. So much for the episode itself.

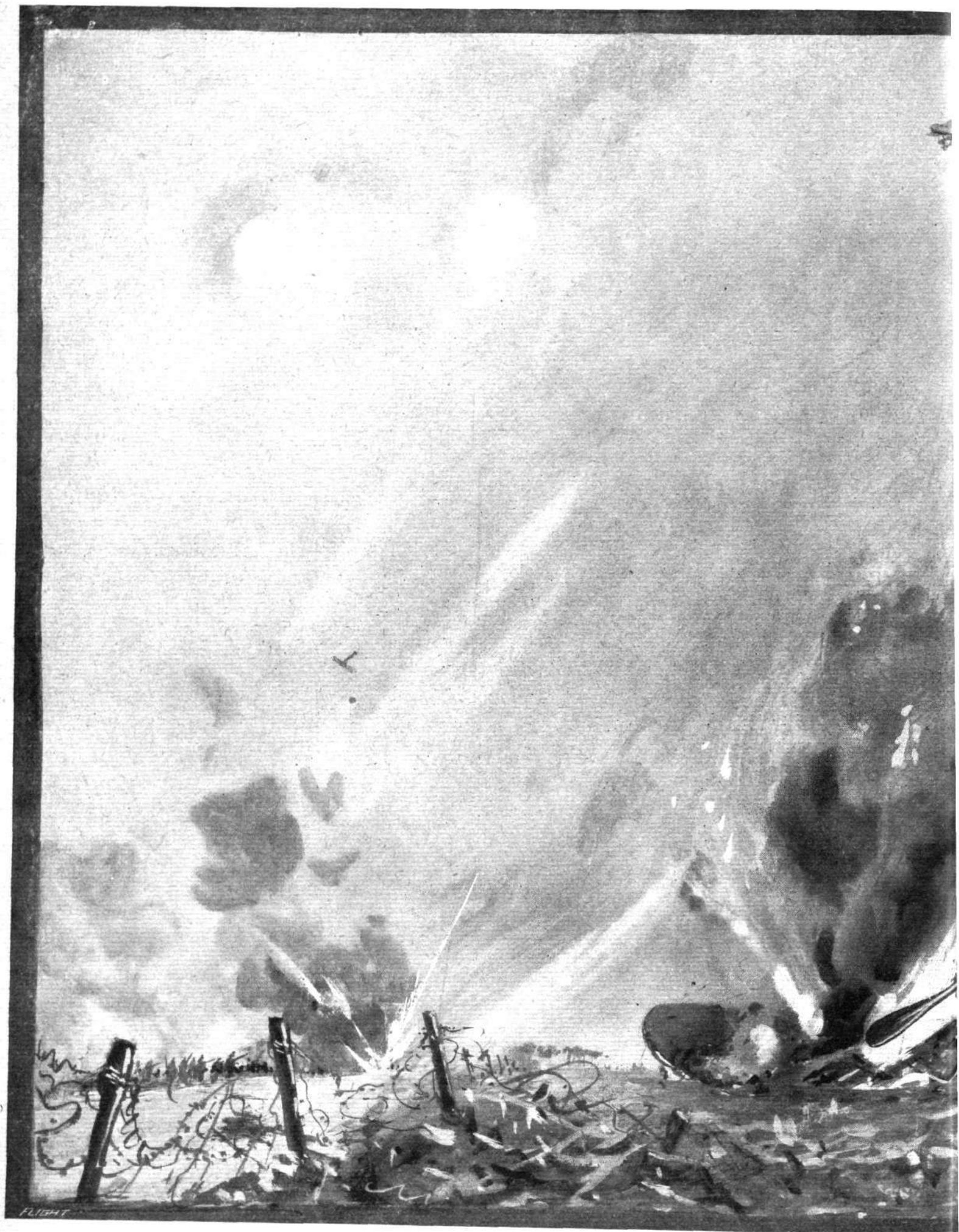
"We got back satisfactorily, to a late lunch, and soon after having entered up our report as to whether or not the machine was worth salvaging, were granted permission to go up to the wreckage. X and I, with a flight-sergeant from my flight and a mechanic, set out about 4 by car. . . . A walk of 500 yards brought us up to a line of trenches and dug-outs about 100 yards from the German trenches, though screened from those nearest us by a slight rise in between. That we were in unpleasant proximity was soon apparent, as the 'Phew! phew!' of the bullets came with most disturbing regularity. All the time star-shell-magnesium flares went up and made you sit as still as a rock, as the least movement would give one away. But by now we had reached the wreckage.

"As far as I gathered, viewed from the ground, the fall was full of excitement, and our troops for four miles along the lines had stood up and cheered to a man for several minutes on end. In fact, a few had said to the officer in command of the battalion—so he told us—that they all felt that it was worth four days' discomfort to see it come down 7,000 ft., as the engine was going all the time, and it only took 35 secs. to drop the best part of two miles. You can imagine the pace it was going when it hit the ground. Finishing its descent in a nose dive, as I said, with its engine going, it first struck the top of a dug-out. It would seem that fellows watching its descent and seeing its course to be headed towards them, had taken refuge in a dug-out. The roof was built of trunks of trees of reassuring dimensions, covered with 3 ft. of earth.

"The impact was so great that owing to the weight of the engine it had gone slap through the roof and buried its nose into the bottom of the dug-out, leaving a portion of its tail outside, but the rest so telescoped as to occupy not more than a cubic yard. Remembering the fact that this type of machine has an all-steel frame, and that behind the pilot's seat there is nothing of weight, it helps to emphasise what a colossal speed he must have been travelling. The four occupants of the dug-out were all wounded as a result, but none seriously.

"Of what we saw in that dug-out, 10ft. by 12ft., by the light of an electric torch through the smoke, the time being midnight and shells going off all round, I shall never forget as long as I live.

"As mementoes of a very gruesome occasion I have got two decoration ribbons which the observer was wearing—though no medals were found, one of the ribbons is that of the Iron Cross. I have also the magneto from the engine and a pistol for firing coloured flares to range their anti-aircraft batteries on our machines, a portion of the fabric and plane—though the crosses from the wings had already been collared—and a few regimental buttons from his tunic, which we shared out to the mechanic and sergeant with us."



**BROUGHT DOWN BETWEEN THE LINES.**—As a result of many duels in mid-air between the British and the Germans, there is intense interest by both sides in the trenches. The above picture portrays one of these incidents in Flanders, in a recent battle. From an original photograph.



JANUARY 6, 1916.

FLIGHT



German machines, enemy pilots are continually forced down between the lines, the combat being often witnessed with German Taube, crippled by one of the British machines, has fallen between the British and German lines, a blazing ing by Algernon Black.

# AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

## British.

*General Headquarters, Dec. 29th.*

"YESTERDAY the enemy made an unsuccessful attack on one of our aerodromes. Of four machines only two reached their objective. No damage was done. One of our aeroplanes was shot down."

*General Headquarters, Dec. 30th.*

"Yesterday sixteen of our aeroplanes bombed Comines Station. The station, railway lines and sheds in the vicinity were hit. Ten of our aeroplanes attacked Hervilly Aerodrome and did considerable damage. In both the above cases all machines returned safely."

"During the day there were twelve encounters with hostile aeroplanes. One of our machines engaged four of the enemy, one of which is believed to have been brought down and another damaged, all four being driven off. One of our aeroplanes was brought down as a result of a combat with two hostile machines."

## French.

*Paris, Dec. 29th.*

"*Balkans.*—The first aviators, who landed at Salonica on October 19th, encountered great difficulties in installing an aviation park, as the mobilised Greek army had taken over all suitable places. Nevertheless the first squadron was ready in less than a week, and effected the first reconnaissance on October 31st in the Gevgeli region."

"Flying is especially difficult in Macedonia, as landing places are non-existent, the ground very hilly, and it is very cold. Despite this the airmen during November made 54 flights, and obtained valuable information. They bombarded important camps especially at Uskub Ishtip, and Strumitza with great effect, particularly at Strumitza, where they caused an absolute panic. Their exploits created great admiration among the Greek people and army."

*Paris, Dec. 29th. Evening.*

"On the heights of the Meuse our artillery, firing against a German battery marked down in the Bois-de-Warmont, north-east of Saint Mihiel, was, according to the reports of aviators, very successful."

*Paris, Dec. 30th. Evening.*

"To the north of Soissons our artillery fire, directed by aeroplane, reduced to silence and damaged a German battery."

"*Dardanelles.*—In the afternoon an enemy aeroplane, which attempted to fly over our lines, was driven off by Allied machines."

"*Balkans.*—During the 29th inst. our aeroplanes bombarded the Bulgarian parks and encampments at Petrik, to the east of Lake Doiran. There is otherwise nothing to report."

*Paris (Ministry of Marine), Dec. 31st.*

"During the bombardment of Durazzo on the 29th the enemy used waterplanes. One of these machines was destroyed by an Italian cruiser."

*Paris, Dec. 31st.*

"German aeroplanes flew over Salonica between 9 and 9.30 on the morning of the 30th inst., but were driven off by the fleet guns. In the course of their flight these aeroplanes dropped thirty bombs, which, fortunately, however, made no victims."

*Paris, Dec. 31st. Later.*

"Some Aviatiks dropped bombs on Salonica on the 30th. One of these bombs fell on a Greek detachment which was carrying out manoeuvres in the presence of Prince Andrew. A shepherd was killed fifty yards away. The material losses were insignificant."

## Italian.

*Rome, Jan. 2nd.*

"Hostile aeroplanes yesterday dropped bombs on Marco, Strigno, and Borgo. There was no damage."

## Montenegrin.

*Cettinje, Dec. 27th.*

"An Austrian aeroplane, on the 27th inst., threw several bombs on Podgoritza, killing two Austrian prisoners."

## German.

*Berlin, Dec. 29th.*

"The English lost two aeroplanes yesterday, one of which was forced to descend to the north of Lens by the fire of our anti aircraft guns. The other one, a large battle aeroplane, was shot down in an aerial battle to the north of Han. On December 27th a third English aeroplane was destroyed by fire to the west of Lille."

*Berlin, Dec. 30th.*

"The activity of the aviators was also very lively on both sides. An enemy aeroplane squadron attacked the village of Werwicgand Menin, and the railway establishments there. No military damage was caused. On the other hand, seven inhabitants were injured, and one child killed. One English aeroplane was shot down in an aerial battle to the north-west of Cambrai."

*Berlin, Dec. 31st.*

"An enemy air attack on Ostend caused considerable damage to buildings in the town. The monastery of the Sacre Cœur especially suffered. Nineteen Belgian inhabitants were injured and one killed. No military damage was done."

## Turkish.

*Constantinople, Dec. 29th.*

"On the Dardanelles front one of three enemy aeroplanes flying over Ari Burnu was hit by our artillery fire and fell into the sea. It was subsequently towed by two vessels to Imbros."

"One of our waterplanes successfully dropped four bombs on the enemy's camp."

*Constantinople, Dec. 30th.*

"In the forenoon our artillery brought down a biplane which was flying over Yeni Shehr and Kum Kale (at the entrance of the Straits, on the Asiatic coast). It fell into the sea near Tekke Burnu and was towed in the direction of Imbros."

"On December 27th, one of our seaplanes undertook reconnoitring trips, flying over Lemnos and Mavro (between Tenedos and the entrance of the Straits) and successfully dropped bombs on the harbour and war stores at Mudros, which were set on fire. Otherwise there was no news."

*Constantinople, Dec. 31st.*

"On Wednesday one of our seaplanes dropped bombs



on the enemy camp at Sedd-el-Bahr, causing an outbreak of fire."

*Constantinople, Jan. 1st.*

"One of our aeroplanes successfully dropped bombs on an enemy camp near Sedd-el-Bahr and on its transport. Another aeroplane dropped bombs on the battleship 'Swiftsure.'"

*Constantinople, Jan. 2nd.*

"One of our seaplanes attacked a hostile aeroplane

and prevented it from continuing a reconnaissance, putting it to flight."

*Constantinople, Jan. 3rd.*

"A Turkish seaplane dropped bombs on the enemy's camp near Sedd-el-Bahr. Our batteries on the Dardanelles successfully shelled enemy works at Sedd-el-Bahr, destroying a number of storehouses.

"Our aviators flew over hostile positions and made successful reconnaissances."

### "MENTIONED IN DESPATCHES."

IN the list of names appearing in a supplement to the *London Gazette* of the 1st inst., of those recommended to the Secretary of State for War by Field-Marshal Sir John French for Service in the Field, appear those of the following officers in the Royal Flying Corps. The list is dated November 30th, and is an addition to the despatch dated October 15th:—

Acland, Second Lieut. (Temporary Lieut.) W. H. D., Royal 1st Devon (Yeomanry); Adamson, Lieut. (Temporary Capt. in Army) W. C., Special Reserve; Andrews, Second Lieut. J. O., Royal Scots; Ashmore, Lieut.-Col. E. B., M.V.O., Royal Artillery.

Babington, Second Lieut. (Temporary Capt.) P., Hampshire Regt. (T.F.); Baldwin, Second Lieut. (Temporary Lieut.) J. E. A., 8th Hussars; Baring, Lieut. Hon. M., Special Reserve; Barrington-Kennett, Capt. V. A., Special Reserve; Barratt, Lieut. (Temporary Capt.) A. S., Royal Artillery; Becke, Brevet-Major (Temporary Lieut.-Col.) J. H. W., Nottinghamshire and Derbyshire Regt.; Bell-Irving, Capt. M. McB., Special Reserve; Birch, Lieut. (Temporary Capt.) W. C. K., Yorkshire Regt.; Blackburn, Capt. H., Special Reserve; Board, Major A. G., South Wales Borderers; Boyle, Capt. (Temporary Major) Hon. J. D., Rifle Brigade; Bradley, Capt. C. R. S., 4th Cavalry, Indian Army; Branker, Brevet Lieut.-Col. W. S., Royal Artillery; Brock, Capt. H. Le M., Royal Warwickshire Regt.; Burke, Brevet-Major (Temporary Lieut.-Col.) C. J., D.S.O., Royal Irish Regt.; Bush, Second Lieut. E., Special Reserve.

Capel, Second Lieut. A. J., Somerset Light Infantry; Cemlyn-Jones, Lieut. J., Royal Welsh Fusiliers (T.F.); Charlton, Major (Temporary Lieut.-Col.) L. E. O., D.S.O., Lancashire Fusiliers; Christie, Capt. A., Royal Artillery; Cleaver, Temporary Captain F. H.; Cooper, Second Lieut. H. A., Special Reserve.

Darley, Lieut. (Temporary Capt.) C. C., Royal Artillery; Dawes, Capt. (Temporary Major) G. W. P., Royal Berkshire Regt.; de Havilland, Capt. H., Special Reserve; Douglas, Lieut. W. S., Royal Field Artillery, Special Reserve; Dowding, Capt. (Temporary Major) H. C. T., Royal Artillery.

Evans, Temporary Lieut. A. J., Special List.  
Festing, Major F. L., Northumberland Fusiliers; Filley, Lieut. O. D., Special Reserve.

Gilbert, Second Lieut. E. M., Essex Regt., Special Reserve; Glanville, Capt. H. F., West India Regt.; Glen, Second Lieut. D. A., Manchester Regt.; Gossage, Lieut. (Temporary Capt.) E. L., Royal Artillery; Gower, Capt. E. L. M. L., Special Reserve; Greenwood, Temporary Second Lieut. B. P., Special List; Grenfell, Lieut. (Temporary Capt.) E. O., Royal Artillery; Grey-Edwards, Temporary Second Lieut. H. B. R., Royal Artillery.

Hearson, Capt. J. G., Royal Engineers; Hellyer, Lieut. (Temporary Capt. in Army) F. E., Hampshire Regt. (T.F.); Higgins, Brevet Lieut.-Col. (Temporary Brig.-Gen.) J. F. A., D.S.O., Royal Artillery; Horsfall, Temporary Capt. E. D.; Hyde, Temporary Second Lieut. E. L.

Insall, Temporary Second Lieut. A. J.  
Jackson, Capt. J. L., Connaught Rangers, Special Reserve; James, Lieut. (Temporary Capt.) B. T., Royal Engineers (killed).

Kinnear, Lieut. (Temporary Capt.) J. L., Liverpool Regt.  
Lawrence, Lieut. (Temporary Capt.) G. A. K., D.S.O., Royal Artillery; Lewis, Capt. (Temporary Major) D. S., D.S.O., Royal Engineers; Long, Second Lieut., S. H., Durham Light Infantry;

Longcroft, Brevet Major (Temporary Lieut.-Col.) C. A. H., Welsh Regt.; Longstaff, Major R., Royal Field Artillery; Loraine, Capt. R., Special Reserve; Lubbock, Temporary Lieut. Hon. E. F. P., Army Service Corps; Ludlow-Hewitt, Capt. (Temporary Major) E. R., Royal Irish Rifles.

Marshall, Capt. A., D.S.O., 28th Cavalry, Indian Army; Medlicott, Temporary Second Lieut. H. W.; Mills, Lieut. (Temporary Capt.) G. D., Nottinghamshire and Derbyshire Regt.; Mitchell, Capt. W. G. S., Highland Light Infantry; Mitchell, Second Lieut. (Temporary Capt.) E. H., Royal Artillery; Moore-Brabazon, Capt. J. T. C., Special Reserve.

Nicholl, Lieut. (Temporary Capt. in Army) H. R., Special Reserve.

Parker, Temporary Lieut. A. H. (Lieut. Punjab Volunteer Rifles); Peck, Temporary Second Lieut. R. H., Dorset Regt.; Pike, Lieut. (Temporary Capt. in Army) R. M., Special Reserve; Pinney, Second Lieut. J. C. W. A., Royal Fusiliers; Playfair, Lieut. (Temporary Capt.) P. H. L., Royal Artillery; Popham, Major G. L., Royal Artillery; Porter, Capt. G. T., Royal Artillery; Powell, Capt. (Temporary Lieut. in Army) E. W., Unattached List (T.F.); Powell, Temporary Lieut. F. J.

Ramsay, Qmr. and Hon. Lieut. (Temporary Capt.) J.; Read, Lieut. (Temporary Capt.) W. R., 1st Dragoon Guards; Rees, Capt. L. W. B., Royal Artillery; Reynolds, Brevet Major H. R. P., Royal Engineers; Rumbold, Second Lieut. R. S., Somerset Light Infantry; Russell, Temporary Lieut. J. C., Royal Engineers [Second Lieut. Royal Engineers (T.F.)]; Ryan, Lieut. (Temporary Capt.) C. E., Royal Field Artillery.

Salmond, Major (Temporary Lieut.-Col.) W. G. H., Royal Artillery; Salmond, Brevet Major (Temporary Lieut.-Col.) J. M., D.S.O., Royal Lancaster Regt.; Saunders, Temporary Lieut. R. A., Royal Field Artillery (T.F.); Scholefield, Second Lieut. E. R. C., Lancashire Fusiliers; Shephard, Capt. (Temporary Major) G. S., Royal Fusiliers; Shield, Temporary Second Lieut. H. S.; Simpson, Lieut. (Temporary Capt.) F. W. H., Royal Garrison Artillery; Simpson, Second Lieut. H. R. D., 6th Dragoons; Sison, Temporary Lieut. H. M., Army Service Corps; Smith, Capt. T. V., Special Reserve; Somervail, Lieut. A., King's Own Scottish Borderers (T.F.); Spratt, Capt. N. C., Special Reserve; Steel, Lieut. J. V., Royal Garrison Artillery; Symington, Second Lieut. D. A. C., Special Reserve.

Thomson, Second Lieut. (Temporary Capt.) A. A. B., Royal Warwickshire Regt.

Vagg, Second Lieut. H. R., Somerset Light Infantry; Vaucour, Temporary Second Lieut. A. M., Royal Field Artillery; Verney, Lieut. (Temporary Capt.) R. H., Army Service Corps.

Webb-Bowen, Major (Temporary Lieut.-Col.) T. I., Bedfordshire Regt.; Woodhouse, Second Lieut. J. W., Special Reserve.

Yule, Second Lieut. L. W., Special Reserve.

Angell, No. 297 Actg. Sergt.-Maj. J. P.; Armstrong, No. 160 Sergt. A. W.; Armstrong, No. 1983 Sergt. A.; Beer, No. 555 Sergt. A. A. J.; Bethell, No. 348 Sergt. H. E.; Brown, No. 812 Flight-Sergt. G.; Chapman, No. 728 Cpl. G. S.; Elstow, No. 1164 1st Class Air Mechanic W.; Hawley, No. 1025 Cpl. A.; Hunter, No. 208 Actg. Sergt.-Maj. A.; Ibbott, No. 586 Flight-Sergt. W. C.; James, No. 152, Flight-Sergt. F.; Keegan, No. 346 Actg. Sergt.-Maj. M.; Kelly, No. 272 Flight-Sergt. E. J. P.; Knight, No. 1053 Cpl. E. J. A.; Noble, No. 1443 Flight-Sergt. T. C.; Randle, No. 1629 Sergt. A.; Smith, No. 144 Sergt. W.; Veitch, No. 635 1st Class Air Mechanic P. M.; Woods, No. 248 Actg. Sergt.-Maj. H.

### Larger and Faster Aeroplanes.

MR. LYNCH also asked the Under Secretary for War whether he could state what progress had been made in developing the aircraft service during the last three months in regard to the construction of large aeroplanes utilising several engines capable of developing great horse-power and of attaining a high rate of speed.

Mr. Tennant said that aeroplanes of the type mentioned were being constructed from several different designs. If he were to give details, it might be information of assistance to the enemy.

### London's Anti-Aircraft Defences.

REPLYING to a question put by Mr. King in the House of Commons on Tuesday, Mr. Tennant, Under Secretary of State for War, said it was not in the public interest to make any statement about recent developments or changes in the aircraft defences of London.

Mr. King: Can we know whether Sir Percy Scott is still in command of the guns?

Mr. Tennant: Yes, sir; he is in command to-day.

# A "POPULAR" TYPE AEROPLANE DESIGN.

By C. M. POULSEN.

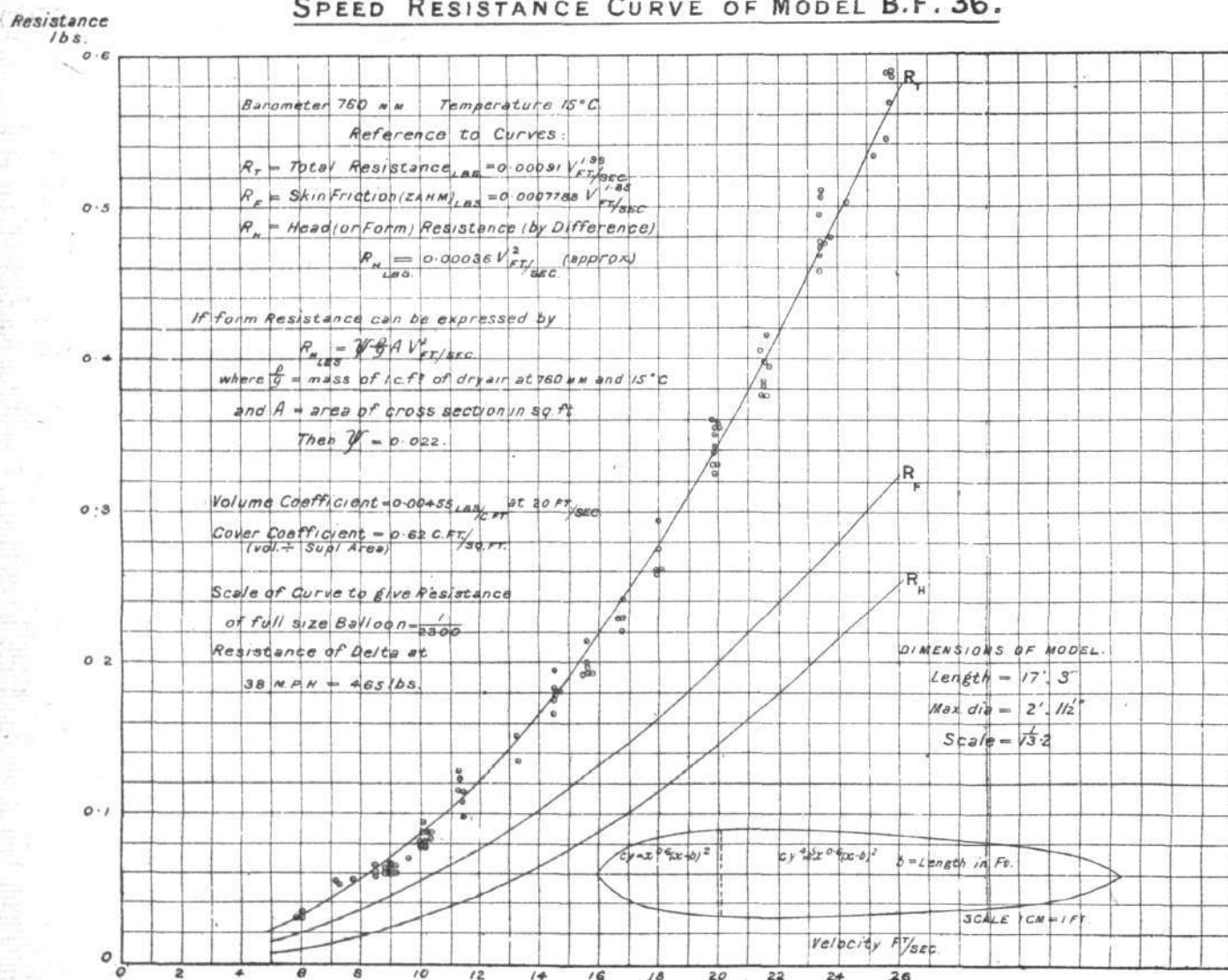


WHEN man first succeeded in accomplishing extended flights on the heavier-than-air type of machine, he did so with the aid of engines of comparatively low power, and when machines of to-day are fitted with motors of several hundred horsepower it is chiefly, or at any rate to a very great extent, due to the fact that the demand for speed, climb and carrying capacity has grown at a much more rapid rate than has our knowledge of the science of aviation. By this I do not mean to infer that when this knowledge is of a more thorough nature machines will be developed which will fly successfully with engines of half-a-dozen horse-power or even less, but I do think that as we learn more about the subject we shall produce machines which will do all that the present-day machine does with very much smaller power, or, looking at it in another way, do far better with the same power. If aviation is to take its place in our daily life, much as does motoring nowadays, and become a popular sport enjoyed not only by a comparatively few enthusiasts, but by people in their

thousands, the aeroplane must be put on a commercial basis and become so efficient aerodynamically that it will not require motors of abnormally high power with corresponding high initial cost, upkeep and fuel consumption.

That the military aspect of aviation will continue to expand at an enormous rate after the war nobody who is able to see further than the end of his nose will doubt, since the development of aircraft will nullify that isolation with which the sea has up to the present kindly provided these islands. That the sporting side of flying will receive a similar impetus seems to me equally certain, in view of the grip aviation has already obtained on the public imagination, and the rapidity with which the interest in all matters aeronautical is spreading in ever-widening circles. Already the development of service aviation has been instrumental in starting the ball rolling, and one receives proof daily—on the 'buses, in the streets, and on the railways—of the intelligent way in which the B.P. has grasped the significance of the fifth arm. Some day—and not very distant either—this interest in and understanding of flying is going to manifest itself in a closer, more intimate study of the possibilities of the aeroplane as a

SPEED RESISTANCE CURVE OF MODEL B.F. 36.



Resistance curve of the model of B.F. 36.



pleasure and a commercial vehicle, and the manufacturer who is far-seeing enough to realise the unlimited scope of aviation as a sport and recreation, as well as its commercial possibilities, will reap a handsome benefit from turning his attention to the development of the small, low-powered and low-priced aeroplanes.

I have yet to come across the man who, once having tasted the exhilaration of flying, is not an aviation enthusiast for the rest of his life, and there cannot fail to be, after the war, a number of pilots who, although no longer in the air services for various reasons, will be keen on "keeping their hands in" as civilians. Out of these quite a fair proportion will be in a position to buy their own machine, provided it is not going to be prohibitively expensive, either in first cost or upkeep. To cater for the requirements of these ex-service aviators will form a good opening for manufacturers, a comparatively small one, it is true, but an opening nevertheless which may—and in my opinion will—form the beginning of a huge industry, in which the man who looks ahead would have an opportunity to establish himself with a comparatively modest outlay of capital.

While this is all a thing of the future—the end of the war not being in sight yet, and its termination probably going to be, as a friend of mine put it, "a jolly slow job for the first seven years"—there is another sphere in which the small low-powered machine would prove very useful at the present time. For *brevet* tests and extra practice after obtaining "ticket," both at civilian and service schools, where frequently much higher-powered machines are employed, the small machine designed to be relatively fast would seem to meet the requirements. Incidentally if a number of such machines were in use, forming a stepping stone from the school aeroplanes to the high-powered service machines, the country might be saved a goodly amount of money in smashes.

What then would be the requirements to be met in order to provide an aeroplane which, without being too expensive, would be fast enough to furnish some really useful experience? To be of any practical use it would have to be capable of at least 60 to 65 miles per hour, carry a supply of fuel sufficient for about three hours' flight, and have a landing speed in the neighbourhood of 35 m.p.h. My contention is that such a machine is possible with an engine as low as 30 h.p., and it is the object of this article to find out whether or not I am right in my calculations. If first estimates be wrong, we must investigate again until we have settled to our own

satisfaction the question of the practicability of a machine capable of doing from 65 m.p.h. to 35 m.p.h., carrying a pilot and three hours' fuel. If any reader disagrees with me on any point I shall be very pleased if he will communicate his views, raising any point that may seem to him doubtful, and the correspondence ensuing and criticism offered should help greatly to add instructive interest to the problem.

One of the first considerations when designing a machine is the choice of a body of such form and construction as to give a maximum of strength for a minimum of weight and resistance. In the first respect probably, and in the last certainly, the circular section proves largely superior to one of rectangular section, and the best construction of a good streamlined body, which would give the best results from the point of view of resistance, would undoubtedly be the *monocoque* type. Since, however, this form of construction is rather heavy, and costly to build, and one of the *raison d'être* of our machine is low cost, we had better dismiss the idea of a *monocoque* body and attempt to find other means of obtaining a good streamline form, which is such an essential factor in the equation of economical flight. That this is so will be readily realised when it is remembered that for each pound saved in resistance the machine will carry an additional load of 8 lbs., assuming a gliding angle of 1 in 8. As it would be desirable to know beforehand what will be the resistance of the body, we will choose a form of which we have a good supply of model figures determined by experiments. In Lieut.-Col. O'Gorman's "Notes on the Resistance of Airship Shapes" (Report No. 43, page 52 *et seq.*, Technical Report of the Advisory Committee for Aeronautics for the year 1911-12) is given the resistance of a number of airship models, from which we shall choose that of the dirigible B.F. 36, the model tested being approximately of the dimensions we require for the body of our machine. In the accompanying graph (from the N.P.L. Report) are shown the results of the tests on this model, which was 17 ft. 3 ins. long by 2 ft. 11½ ins. max. diameter. The value of  $K$  for this model in the equation  $R_T = K V^{1.98}$  is  $R_T$  = total resistance in lbs. = 0.00091  $V^{1.98}$ , from which the resistance at any speed is easily found. The next step is to find a method of constructing a body, of approximately this form, without resorting to the expensive *monocoque* type. This will be dealt with in our next issue.

(To be continued.)

### The Air Raid on Salonika.

As was not altogether unexpected, the first warlike act of the Central Powers against Salonika took the form of an air raid, of which the following details were sent to the *Daily Mail* by their correspondent at Salonika:—

"German aeroplanes have been reconnoitring during the last three days. This morning (December 30th) four Aviatiks and two Albatroses crossed the zone occupied by the Anglo-French forces and dropped several bombs. One fell near the Italian hospital, another about 100 yards from the Greek General Zimbracaki, who was inspecting the 13th Regiment, and four in the fields close to the Alatini brickworks near Prince Andrew, who was following cavalry manoeuvres. One bomb dropped close to two Greek squadrons under the command of Commandant Metaxas, killing a Greek shepherd and four sheep. Bombs also fell near the Villa Alatini, the former residence of the Sultan Abdul Hamid.

"The fleet's batteries opened a violent fire on the Aviatiks, without result. Then three French waterplanes and three aeroplanes pursued the Aviatiks, and they retired towards the frontier, but

their escape was cut off by Allied machines which had ascended from the aviation ground on the advanced lines. Taken between two fires, the Aviatiks gave battle. For a long time the machine guns were heard in the air, and the wings of the aeroplanes were pierced by bullets. The Aviatiks managed to descend, some near Ghevgeli and others near Kavadar on an aerodrome formerly used by the Allies. A captive observation balloon is constantly in use."

Following on the raid, General Sarraïl, the French Commander-in-Chief, ordered the arrest of the German, Austrian, Bulgarian and Turkish Consuls and their Staffs, who were placed upon a French ship. A large number of enemy subjects suspected of espionage were also arrested.

The Greek Government addressed a protest to the German Government because the German aeroplane passed over Greek territory, dropping a bomb which killed a shepherd. Following on a protest by the enemy powers to Greece against the arrest of their Consuls, a formal protest was lodged with the Entente Powers.



I READ a short story the other day, quite an interesting little yarn, in which an author was supposed to be writing a serial, and sending in his MS. as written, that is, week by week. And he was in awful trouble because he had got his characters so mixed that he could not unmix them in order to bring about the final happy ending as intended. He was just considering whether to cause a Zeppelin to drop a bomb and make an untimely end of half his characters, so that he might retire gracefully from his muddle, when he received a telegram to say the paper had ceased publication, and that he would be compensated.

Somehow that story reminded me of my old school-master in the early days of my school-life. He was an exceedingly clever man up to a point, which point occurred some considerable time before the period at which boys leave school. Luckily no boy ever stayed there to finish his schooling, and so the master was saved the calamity which would undoubtedly have arisen had he been compelled to see the thing right through. He was somewhat of a scientific crank, and I think his learning did not go very deeply into any subject, yet the number of subjects on which he could teach, and teach well and truly until he began to get into deep water, was really amazing, and the deep water was quite a long way from the shore.

He taught French, after a fashion, though I firmly believe he had had but little schooling in that direction, and used to rely upon learning it himself, and always keeping a few weeks ahead of his scholars in addition to spending his summer holidays in Paris in order to add to his vocabulary.

I must tell you that these early years of my life were spent in a village school, as my father's business at that time kept him on a large estate of which he had the management, and there was no other school or town within many miles. The teaching staff consisted of the master, his wife, and two or three grown-up sons and daughters, and as all the latter were themselves taught by their father, the knowledge distributed throughout the family was somewhat restricted in its variety, both in quantity and quality. I firmly believe his lessons in chemistry and physics were practised overnight in his parlour, to be shown to the class next day. Yet he was never at a loss to make them successful, even had he to employ unfair means whilst standing between the class and the object. I remember his lesson on magnetic attraction and repulsion to this day. He had a piece of steel balanced on a pivot, and a bar magnet (home made) in his hand. It was something like this: "You see that when I approach this end of the magnet to the steel it attracts, and now when I approach this end it repels—I say it repels—repels," but it didn't, until he gave the bar a sly push with the magnet. He was great on Latin and Greek, so much as he knew of it. I learned that monolith was taken from mono, one, litho stone—one stone.

That telegraph was taken from tele, afar, grapho to write, I write afar. He had an enormous telescope with which he used to view the heavens, as he was keen on astronomy—even had a leaning towards astrology—and was never tired of showing this telescope in school, explaining that tele meant afar, and scpio, I see. Withal he taught me the rudiments of many things which have been of great use to me in after life, and a limited knowledge of the heavenly stars was one.

I might digress to say that it was he who first called me a "Dreamer" which was no doubt cogent, taking my behaviour into consideration. Also, although I tell it against myself, he predicted that I should die on the scaffold (which has not come to pass—yet). But that was excusable, as it occurred after I had wrapped a No. 12 sporting cartridge in a lump of wet clay, and carefully deposited it in the very heart of the school-fire, to the ultimate consternation of the scholars who were not in the secret, and the joy of those in my confidence.

But to return to astronomy. He taught me, as I say, a fair knowledge of the heavens, and so I am interested in those splendid little maps or charts of the heavenly bodies by E. Walter Maunder, F.R.A.S., which are published by the *Daily News* every month, and which give the night sky for the following four weeks. In the one for January, I notice that Mars is hanging in Leo. Mars, you know, is the god of war, and Leo we take as our national symbol—the Lion. Lord Tennyson wrote of Mars when hanging in Leo, "Glowing like a ruddy shield on the Lion's breast."

That there is more in heaven and earth than our understanding is capable of grasping, all will admit. We know that heavenly bodies have an influence on this, our world, and I do not care to make too light of the suggestion that certain planets may have a good or an evil influence on certain parts or peoples when they occupy certain positions. It is pleasing to me to think that when "Mars hangs its ruddy shield on Leo's breast" it is an emblem of protection. It is, perhaps, excusable in me, that having imbibed some of my old master's learning in astronomy, I have also gone a little along the road of astrology in his company, and I like to think that when England is at war, and Mars is hanging in Leo, that it foretells success for our arms.

It is quite possible, of course, that it foretells nothing of the sort, yet I learn from a recent lecture by Professor H. H. Turner that Mars hung in Leo during part of the Crimea—to be exact, on March 24th, 1854; that it was in the same position during the Boer war; and that now, on January 1st, 1916, it hangs once more in Leo, to cheer me with the thought—and it does cheer me, whether there be anything in it or not—that the time is not far distant when that limb of hell and all his murderous associates shall be beaten to their knees, and our armies, and their gallant allies, shall return to their homes, the greatest conquerors in the greatest conflict the world has ever known.



# EDDIES

IN the last copy to hand of our excellent French contemporary *l'Aérophile* I came across a few particulars of the accident which cost poor Gaston Caudron his life. He was making a flight at the Military Aerodrome at Bron (Rhône), on December 12th, in one of the twin-engined Caudron biplanes. Mounted in the nose of the central *nacelle* was a wooden model of a machine gun which was carried for experimental purposes. This dummy during the flight became dislodged and got wedged in in such a way that it locked one of the controls, with the result that the machine became unmanageable and fell to the ground. In the terrible smash that followed, poor Caudron, as well as M. Desmarais his designer and Jeame his mechanic, was killed. After a ceremony at Lyon the obsequies were held at the Madeleine Church in Paris on December 18th, at which M. Robert Esnault-Pelterie spoke on behalf of l'Aéro-Club de France, Colonel Bouttiaux on behalf of l'Aéronautique militaire, and M. Lucien Millevoye, deputy, on behalf of the groupe parlementaire de l'aviation.

While chatting to Mr. Fletcher at the offices of the London and Provincial Aviation Co. the other day about the new tractor biplane, of which parts are now getting finished, we were looking over the detail drawings, when among them I came across one which was slightly out of its element in that particular drawer. Inquiry revealed



that the straying sketch was the work of one of the L. and P. instructors, Mr. Sykes, who seems to have a happy turn of wit and the skill to be able to put it on to paper, as may be judged by the little effort in question annexed hereto. The farmer's dialect must look after itself; I'm no judge.

However, we are getting away from the L. and P. biplane drawings, just as I did when I found Sykes' sketch. In addition to the various wood parts of the new L. and P. 'bus, a lot of the metal fittings are coming through, and a very promising lot they look. By a

liberal, but judicious, employment of Duralumin, Mr. Fletcher has managed to keep down weight to a surprising degree without in any way detracting from the strength. In fact, with the exception of the wiring plates, nearly all the metal parts are made of this metal, even the tubular wheel axle, which, although being, if I remember rightly,  $1\frac{1}{4}$  in. outside diameter, only weighs about four lbs. The wings too are coming out very light, the ribs, which are made of spruce webs and flanges, weighing only about four oz. each. They are of a section somewhat similar to the R.A.F. 6, with a slightly modified lower camber. Everything going well, it is hoped that the 'bus will be ready to take the air in something less than two months' time. The trials will be awaited with interest.

It is inevitable that with such a great number of Voisin biplanes in use for bombing expeditions a large percentage should be struck by enemy projectiles, and as a rule no great notice is taken of such hits by the pilots in charge unless bullets get home in a vital part of the machine. Some time ago one of these machines returned from a successful aerial duel with an Aviatik, and it was found that it had no less than eight bullet holes in it, all of which indicated that the Germans came pretty near scoring a bull with several of their shots. Five went through the *nacelle* in the immediate vicinity of the pilot's and passenger's quarters. The other three lodged respectively in the pilot's coat, in the observer's shoe, and in one of the pipes of the engine. This is the fourth time that this particular Voisin—No. 860—has been in a "scrap" with a German machine, and its pilot, Lieutenant Dampierre, who is second in command of l'escadrille Voisin 21, has had many narrow escapes.

Walter L. Brock, of air race fame, who is now, as pointed out in "Eddies" some time ago, connected with the Thomas Brothers Aeroplane Co., of Ithaca, N.Y., U.S.A., has been busy lately testing the new Thomas machines. One of these, the second seaplane built for the U.S. Navy, was doing excellently during the trials, several new improvements having been effected in her construction. On the eve of her acceptance trials she had been flying well, carrying her full load, when on coming down from 2,000 ft., at so steep an angle the pilot was unable to flatten out in time, and she dived into the sea, being completely smashed. Brock and his passenger, luckily, were none the worse for their ducking, with the exception of a slight shock.

During that fine flight of his from Toronto, Canada, to New York City, Victor Carlstrom caused the Customs officers of the port of New York a lot of trouble without knowing it. How it all came about is thus described in our New York contemporary, *Aerial Age*:—

"The trouble began when George F. Doherty, of the brokerage firm of M. L. Eckstein and Co., 21, State Street, informed Collector Malone that he wished to

For I dipt into the future, far as human eye could see,  
Saw the vision of the world, and all the wonder that would be;  
Saw the heavens fill with commerce, argosies of magic sails,  
Pilots of the purple twilight, dropping down with costly bales;  
Heard the heavens fill with shouting, and there rain'd a ghastly dew  
From the nations' airy navies grappling in the central blue;  
Then the war-drum throb'd no longer, and the battle-flags were furl'd  
In the Parliament of Man, the Federation of the World;  
Men my brothers, men the workers, ever reaping something new  
That which we have done but earnest of the things that we *must* do.

*Noel Pemberton-Billing*  
1916

The 1916 greeting (after Tennyson) from Flight-Lieut. Noel Pemberton-Billing, which accompanied a very fine portrait study of Mr. Billing himself.

make an 'entry' for the machine Mr. Carlstrom flew. This would have been a simple matter if the aeroplane

## Medal for Fireman's Bravery at Air Raid.

In the list of awards of the King's Police Medal which was published on January 1st there appeared the following:—

C. A. HENLEY, a Fireman in the London Fire Brigade.

Conspicuous gallantry on the occasion of an attack by enemy airships. He was on duty at his station when an explosive bomb demolished the station and rendered him unconscious for a time.

had been entered as merchandise, or for exhibition purposes, but the experts said that there was no precedent for a case like Carlstrom's, and they were at a loss what to do. Had the machine been entered as merchandise it would have been subject to an *ad valorem* duty of 20 per cent.

"On the advice of the collector's solicitor, the aeroplane was finally entered on the form provided for the masters of sea-going vessels, and as this was an American-made machine, it was held that it was not subject to duty. This ruling, which is, of course, subject to the review of the Treasury Department, establishes a precedent for aviators who cross the frontiers in American-made machines. They must hold themselves to that set of Federal rules which applies to the masters of vessels entering the port from another country.

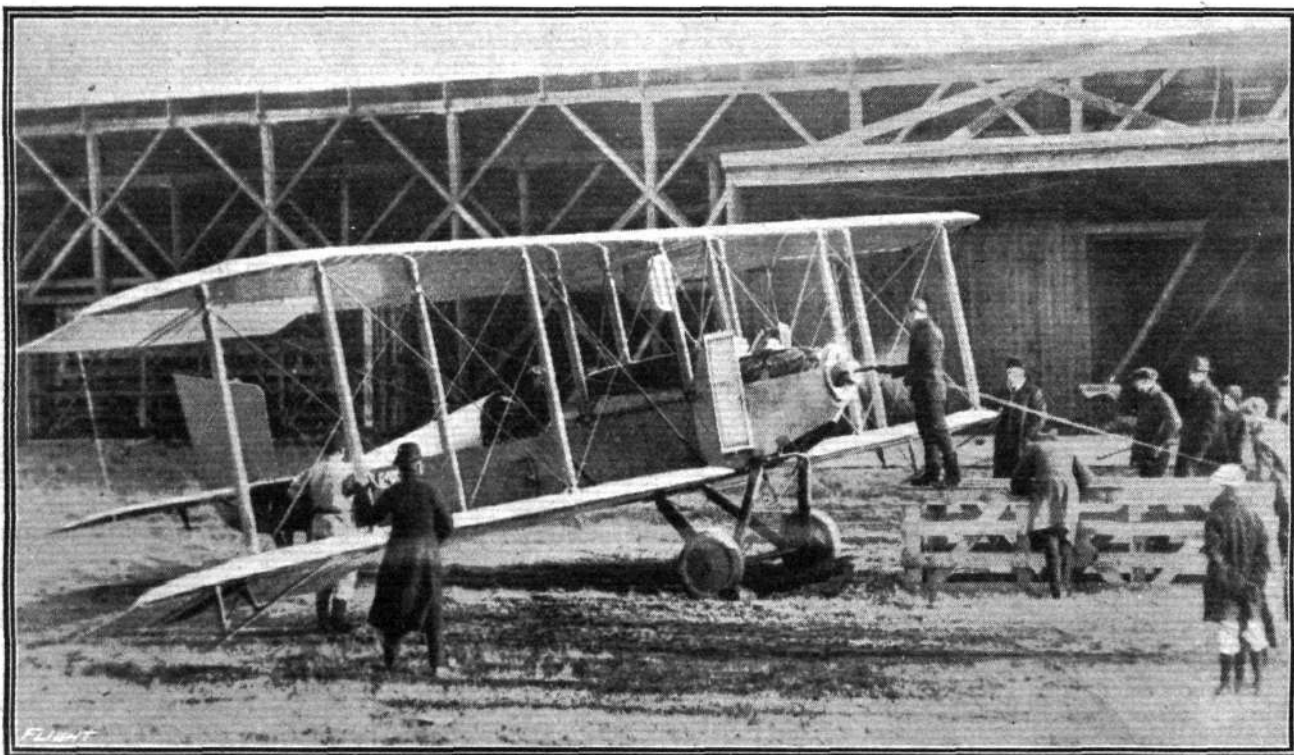
"But after that phase of the matter had been settled, it transpired that Mr. Carlstrom had failed to make a baggage declaration upon his arriving in New York, as he is required to do under the tariff regulations. He was summoned to the Custom House, where he said that he brought no trunks or other merchandise, that his entire luggage was restricted to a new suit of clothing. As an exemption of \$100 is allowed for a traveller's personal belongings, he finally escaped without any taxation.

"While the incident has its humorous side, aviation is pretty sure to develop new and perplexing duties for the collectors of customs as the number of machines increase and international flying becomes a matter of every-day business."

ÆOLUS.



On recovering consciousness, he rescued a woman who was imprisoned as a result of the explosion on the first floor of a neighbouring building and took her to hospital. He then got a hydrant to work on a fire which had been caused by an incendiary bomb. On the arrival of other firemen he was taken home suffering severely from shock. The explosion had ruptured the drum of one of his ears.



The 140 h.p. Sturtevant-motored tractor biplane, one of America's latest machines. It is somewhat larger than usual, and is of practically all-steel construction.



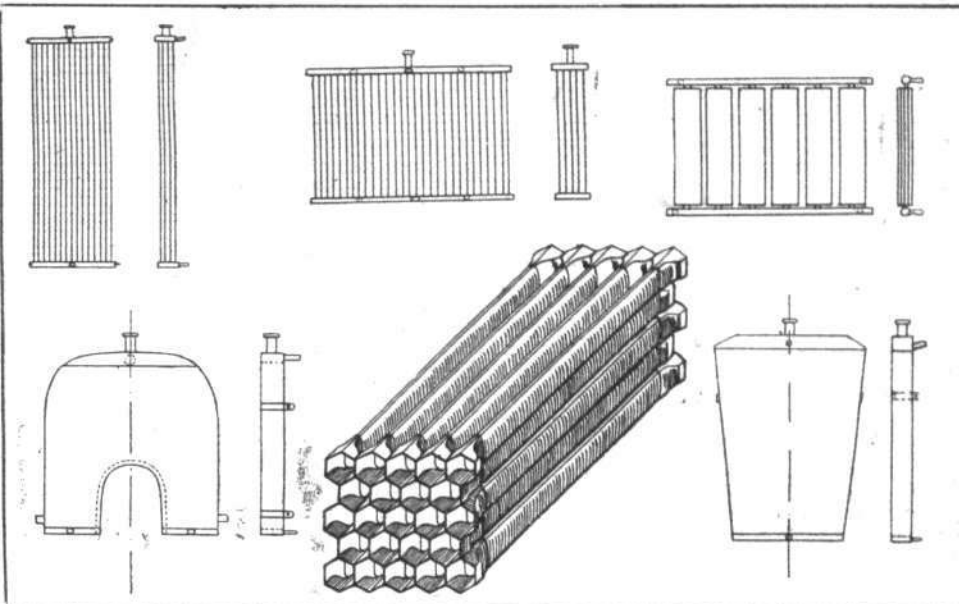
## AEROPLANE RADIATORS.

WHEN a water-cooled engine is employed in an aeroplane not the least important item that occupies a good deal of attention on the part of the designer is the radiator. This has not only to be light, and withal strong enough to withstand vibration, but it must offer as little head resistance as possible. This depends a great deal upon the efficiency of the radiator, for naturally the more efficient the design, the smaller it can be made for the horse-power required. Messrs. Motor Radiators, Ltd., of 80, Faroe Road, Blythe Road, Hammersmith, who are the manufacturers of film and honeycomb

and mounted in the top and bottom tanks so that all the tubes form water-tight communications from top to bottom—the tubes being, of course, vertical. The hexagonal ends allow of sufficient space being left between the tubes to enable the air to circulate freely round them and thus cool the water within, while owing to the shape of the tubes the resistance to the air is reduced to a minimum.

These radiators can be manufactured in a variety of shapes, according to the requirements and design of the machine, and for

Some of the various radiator patterns, and method of construction, by Messrs. Motor Radiators, Ltd.

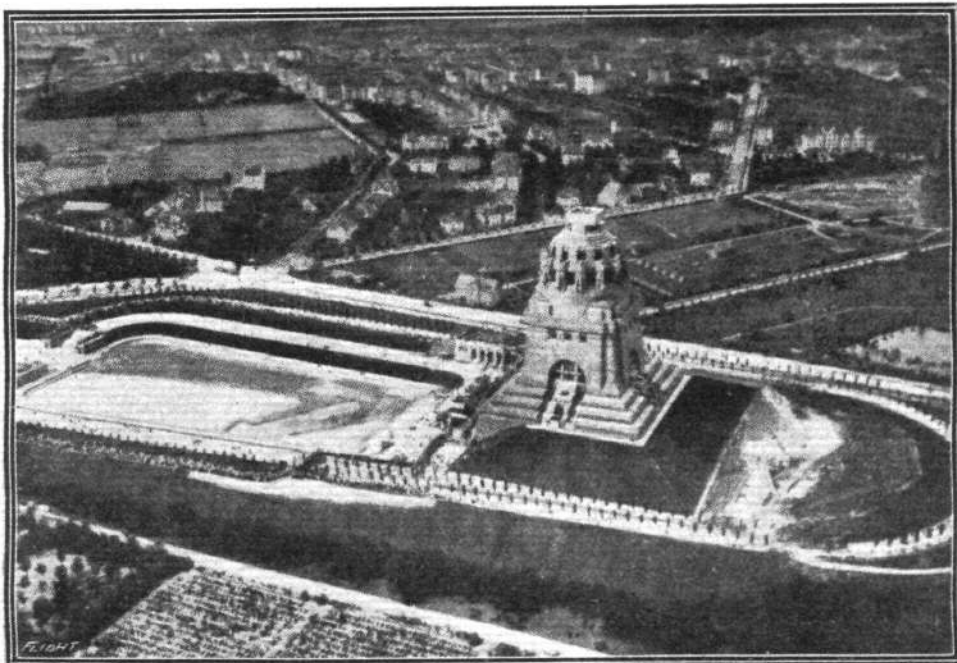


type radiators used on many of the well-known makes of motor vehicles, have evolved a design of a radiator which it is claimed is specially suitable for use on aeroplanes.

This radiator is built up very much on the principle of the usual type of honeycomb radiator, but differs from the latter in that whereas in the usual arrangement the water circulates round, and the air through the tubes, in the new design the action is reversed, the water being inside the tubes and the air outside. As may be seen in the accompanying sketch, the radiator is composed of a number of thin, streamline tubes stacked together in rows. At the ends of each tube are ferrules of hexagonal section which fit close against the adjacent ones as shown. These are soldered together

arrangement either at the front or the side of the fuselage, or in any other convenient position on the machine. A few of the different shapes are shown in the illustration, one of which, it should be noted, is of the unit system on somewhat similar lines to the German Hazet radiator described in last week's issue. More or less of these units are employed according to the horse-power of the engine installed.

Motor Radiators, Ltd., also have a special department for carrying out repairs to radiators, with respect to which it may be remarked that it appears to matter not in the slightest how badly damaged a radiator may be—it will be returned as good as new.



As Seen from Above, in the Land of the Huns.—The Völkerschlacht Memorial at Leipzig.

# AIRCRAFT AND THE WAR.

THE following is from a letter which appeared in the *Times* recently, written by an Oxford undergraduate, who is a despatch rider in France :—

"Yesterday morning I had rather an exciting time. I was approaching the ruined city of — when I saw two airplanes circling round and round each other. I stopped my engine and watched. It was an English 'plane attacking a Boche. The machine-guns of both 'planes were going again and again, as each successively manœuvred into a position to attack the other. Then, to my alarm, I saw a second Boche appear out of a cloud near by. The two closed on our machine, one on either side, and he dived almost vertically. I could not tell whether he was hit or simply trying to get away from the unfair odds. The 'plane dived for some way, then turned on an even keel and came towards me, planing down with the engine stopped. He passed over my head at about 150 ft. up, and making steadily for the field, kept to the road. I thought all would be well, when suddenly the machine turned its nose down and dived straight for the ground from a height of about 30 ft. Some R.A.M.C. men were actually on the ground, but I did not go across, as I had an urgent message.

"On the way back, however, I went to look at the machine. It had fallen in very soft mud, which had saved them a lot, but the machine was absolutely smashed. Both men had been hit by bullets; the pilot was hit twice in the right arm and had had to guide the machine down with his left. He had evidently managed to control it until the last minute, and then had fainted and fallen on to the elevator. The observer had been hit too, and both were knocked about by the smash, but I do not think either of them would die. I felt awfully sick about it.

"While I was looking at the smashed machine I saw another fight in the air. The two machines circled round each other, and dived and soared up in the most wonderful way. Then a second of our machines turned up and the German promptly dived into a very dense neighbouring cloud and stayed there. Our two machines circled round and round the cloud for some time and finally went off."

In the *Morning Post* of December 24th an English lady who has been working for some months in the canteens attached to French hospital trains, in recounting some of her experiences, says :—

"The battles in the air usually happen in the morning. We hear sharp, cracking reports and the sky is suddenly covered with little puffs of white smoke. We race for the best point of view, hoping to see a Taube brought down, but each time the enemy has sailed away in the sun, looking, when we could see him, like a big silver grasshopper.

"When we first arrived someone showed us, across the road from our station, a sort of cave dweller's hut, scooped out of the side of a rampart and banked up with the inevitable sandbags. We are supposed to take shelter here in case of a bombardment, but I had my doubts about that shelter from the moment I saw its uninviting entrance. As it turned out, I need not have worried, for when the bombardment came last Sunday we simply forgot all about the hut. We have had a lively curiosity about bombardments for so long that it was very dampening to find the townspeople so apathetic. Of course, they have gone through two real bombardments from the big long-range cannon, so they may look on bombs dropped from Taubes as not worthy of attention.

"We happened to be in church when a loud crash made the stained glass windows rattle like musketry. One tiny girl looked up to see how her mother felt about it, and the little acolyte serving the Mass was not able to resist turning round with one delighted grin. No one else took any notice at all, though they knew the Cathedral was a target.

"A fourgon cantine was once reduced to match-wood by a bomb, so as soon as Mass was over we hurried back to our present home, very much afraid that we had missed all the excitement. A bomb had exploded only a few minutes before, about fifty yards from our car. It did no harm, and left an incredibly small, shallow hole. When we arrived we found the entire staff of the near-by regimental bakeries in full flight and a Taube flying directly over our heads. Their ammunition must have given out, or the French guns were making it too hot for them to stay. Off they flew, and, alas! got away in safety.

"Personally, we felt quite grateful to them, because their arrival filled a lack in our experience of work in the fourgon canteens."

Mr. J. M. N. Jeffries, writing to the *Daily Mail* from Athens on December 28th, said :—

"Several aeroplanes have arrived at Salonica from France, and the enemy's lines are regularly under observation."

Writing from Rotterdam on December 29th to the *Daily Mail*, Mr. James Dunn said :—

"This morning Allied aeroplanes were out in strong force observing German movements. There were many exciting combats in the air."

An Exchange message from Rome on December 30th says :—

"A message from Salonica says Allied aeroplane observers have discovered that the Germans and Austrians have just begun a general withdrawal from the entire Macedonian front, without repairing either bridges or roads previously destroyed. The withdrawal is believed to be due to Russia's new advance in Bessarabia."

From its correspondent at Sas van Gent, the *Telegraaf* learns that the Germans have repaired the railway bridge blown up by the Belgians, which forms the connecting link between Antwerp and Ostend :—

"Evidently the Germans consider this bridge of great importance, and it is now being exceedingly strongly guarded and defended. At night electric searchlights are continuously sweeping the sky in order to prevent an air attack on the bridge, and the guards have the strictest orders not to allow anybody to approach it."

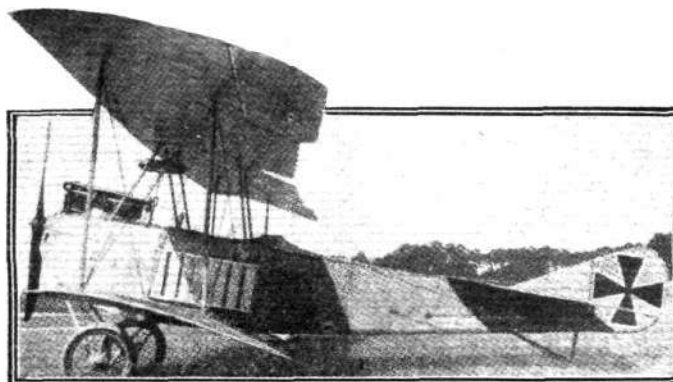
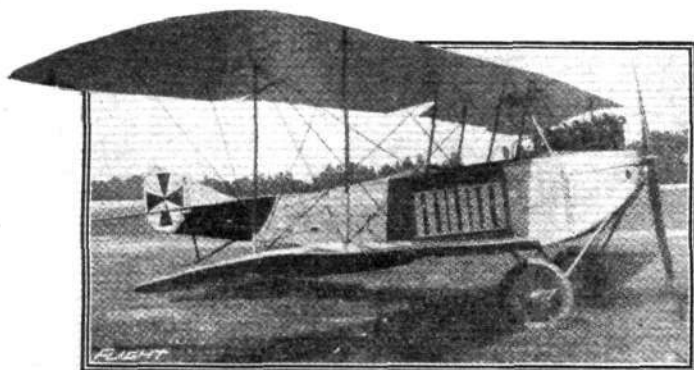
According to information received in Amsterdam from Czernowitz during the recent operations on the Bessarabian frontier, Russian biplanes flew over the battlefields while the fighting was in progress.

A Reuter message from Athens, dated December 30th, says :—

"A French aeroplane made a reconnaissance over Monastir, in consequence of which machine-guns have been placed on the highest building."

The Athens correspondent, under date of Sunday last, writes :—

"It is reported from Salonica that the Allies have completely



Two views of a Goedecker Military Biplane.



organised the aviation service, and enemy aviators are being pursued whenever they make their appearance. French aviators will in future almost continually keep guard over Salonica.

"Yesterday morning a Taube flew over Salonica at an altitude of 4,000 metres, and disappeared immediately in the direction of Ghevgheli."

A Reuter message from Salonica on January 3rd stated:—

"French aviators in the last few days have made frequent flights over the enemy lines, and have dropped bombs on Petrich, Strumitza, and other towns and villages where movements of troops were observed. Although they were fired on by the German artillery none sustained any damage. On the other hand, it is believed that their bombs caused considerable casualties, especially at Petrich, where they were seen to explode in the middle of the town, causing buildings to collapse and fires to break out."

Writing with regard to German intentions, the *Morning Post* correspondent in the north of France says:—

"And there are further reasons why the German power of offence is becoming more difficult—the increased weight of our artillery, which enables lines of communication previously out of range to be effectively shelled, and also the activity and precision of our air fleet, by which important railway junction points behind the German front can be, and are being, damaged as occasion requires. By these means we can disorganise the enemy's preparations in a way in which he cannot hamper our movements."

The following interesting account of an adventure of two aviators at Gallipoli is taken from a letter written by an officer in the Indian Medical Service, which was recently published in *The Times*:—

"On the morning of November 6th, as we lay at anchor opposite the hospital tents on the beach below Suvla Bay taking in the wounded, we had a very exciting experience. One of the British biplanes had been flying over us and round over the Turkish positions, while shells were bursting high up in the sky, aimed at it, and looking just like innocent puffs of fleecy cotton-wool."

"Shortly before 1 o'clock we noticed that the aeroplane was

descending with great rapidity, and, after executing a sharp *vol plané*, it came down with a rush into the sea between us and the shore, the two occupants being thrown out into the water."

"Lieutenant Roberts, R.N.R., in command of the launch which had been conveying the wounded to us, immediately sprang down into the little vessel and shouted to his engineer to 'give her bell.' With a few turns of the propeller the launch was soon hurling itself through the water towards the wrecked airplane. Meantime, another launch was also racing towards the spot, but unfortunately it ran into shoal water and stranded, its crew being obliged to abandon it."

"Lieutenant Roberts now jumped into the water to help one of the aviators who was in difficulties and could not be caught with the boat-hook. By this time the enemy on the heights to the south had trained his guns on the spot, and amidst a salvo of bursting shells the rescuing launch returned to us without any casualties. The aviators were given a hot bath (a luxury unknown for many weeks), a change of clothing, and a good lunch, and were none the worse for their adventure. They had had trouble with their machine before, but did not know the reason for the stopping of their engine. No doubt the Germans will publish a report that the machine was brought down by one of the shells that had been bursting round it within a radius of a quarter of a mile!"

"No sooner had the intrepid Lieut. Roberts brought the rescued officers to our care than he was off again to try and tow the stranded launch out of reach of the shells that were being dropped every minute in its vicinity. The task was, however, impossible, and he and his jovial men returned to us through the bursting shells unscathed. We should have liked to give them a rousing cheer, but the Navy is rather touchy in some ways, and we were afraid of giving offence, so we tried to look as unconcerned as the heroes themselves."

"That night under cover of darkness the salvage of the stranded launch and the biplane was safely effected, and the cost of the adventure may be calculated as fairly divided between the Turks and ourselves—the waste of some 50 heavy shells balancing the bill of repairs to the aeroplane."

"In justice to the Turks it must be added that not once did they aim at our ship, though some of their shots fell within 300 yards, and one or two burst among the hospital tents just beyond the scene."



"Life is a mirror—smile at it and it will smile back; frown at it and it will frown again."

"It was very romantic," said the friend. "He proposed to her in an aeroplane."

"Yes?" murmured the listener, encouragingly.

"And she accepted him in the hospital."—*Pearson's Weekly*.

SUSIE: "Is he in the standing army?"

PHYLLIS: "No; he's in the flying corps."

"So Rita married that aviator fellow after all. Was it a love match?"

"Yes; Rita loves aeroplanes."

#### At Last.

THE publican who got the base of one of our Anti-Aircraft shells through his window on Zeppelin night, wrecking the electric light meter, and so destroying record, has had it mounted as a souvenir. He says it is the only occasion on which Government helped him to reduce current expenses.

#### Unrecorded Sayings of Popular Pilots and Their Friends.

"YES, but that's not the proposition."—E. H. L.

"HULLO, son! had your tea yet? Come along then."—J. H. M.

"AH, bor! we've some 'bus coming out next week. Got a cigarette?"—W. T. W.

"SHAPMON! where is Shapmon?"—L. N.

AERODROME TYPES: Tractors, pushers, and school 'buses.

! ! !

#### Her First Passenger Flight

SHE: "Oh, Claude, I'm nearly frightened to death up here!"

HE: "Be calm, Irma, there's no ground for your fears."

! ! !

#### Confidence in their Ability.

TWO American aviators in the English service were obliged to land during a cross-country flight in England. The country folk plied them with questions.

"Are you the drivers of those aeroplanes?" asked one old lady, intercepting the men as they were starting for lunch.

"Yes."

"They are American aeroplanes, are they not?" she continued.

"Yes."

"Oh, really," she exclaimed; "and have you flown from America this morning?"

! ! !

#### Aerodrome Proverbs.

BETTER an empty hangar than a 'bus that won't fly.

LET every 'plane land on its own chassis.

DON'T fly away with more than you can carry.

FABRIC and dope cover a multitude of sins.

WHERE there's a will there's a *brevet*.



AERONAUTICAL TERMS ILLUSTRATED.—“Banking.”



# Models

ALL communications in connection with this section should be addressed to the Model Editor, "FLIGHT," 44, St. Martin's Lane, London, W.C. Correspondents are requested to write on one side of the paper only.

## The Public Interest in Models.

FROM Felixstowe Mr. S. C. Waggett sends the following contribution to this discussion:—

"I am of the same opinion as 'Scale Model' in your issue of December 1st. It is necessary, if a model aeroplane club is to be a success, that it must have rules that will keep the 'flying sticks' out of it, for if anyone went to see a club flying these 'sticks,' which have no resemblance whatever to an aeroplane of repute, I am sure they would be doomed to disappointment; I, myself, am one of no doubt many more who have had that experience.

"Two or three years ago, I thought of joining a club, but when I went to see them flying their models, instead of seeing some miniature machines of what I had seen at Hendon, found nothing but 'flying sticks.'

"I at once asked the members why they had no models of the full-sized type, some answered, 'they did not know,' others were of the opinion they would be too heavy to go any distance or height, that is all they seemed to trouble about.

"I am quite sure that this 'distance' idea is the reason why model aeroplane clubs are dying out. I think that if the clubs were to have rules that would bar these 'sticks,' and keep the models to the lines of full-sized machines, they would very soon have more members."

Under the *nom de plume* "Model Enthusiast," one of our keenest model workers, who is now in the Royal Naval Air Service, writes:—

"I heartily agree with Mr. W. E. Evans' excellent article in 'FLIGHT' of December 31st. It is always a source of great pleasure to read such letters and to see drawings of real models in your paper. Surely 'flying sticks' have been developed quite enough by now, and no wonder the public takes no interest in them, as it cannot be very fascinating to see a *toy* of this kind 'fly,' but, on the contrary, a scale model, with proper enclosed *fuselage*, and chassis, rising from the ground is well worth seeing.

"At the present time I am about to experiment with a compressed air light scale model, and if successful I will send a drawing along.

"May I here take the opportunity of congratulating 'FLIGHT' on another year of its good work, and wishing it the best of success in the future.

"I should also like to hear other readers' views on the subject under discussion."

## Scale Models v. Flying Sticks.

Mr. Kingsley W. G. Pinney writes from Glasgow as follows:—

"I should like to add a few comments to the letters on this subject in your issues of December 17th and 24th. From my limited experience, I consider that 'flying sticks' soon become uninteresting, except in rough weather, when they certainly cause some excitement both to the aeromodelist and the spectator. On the other hand, I think the model which is built on more or less scale lines will always claim some interest, even from the most uninitiated.

"I have had some experience with enclosed *fuselage* tractors, and

at first the results were decidedly discouraging, but when I obtained flights of over ten seconds I resolved to continue with this type.

"I consider that even if the aeromodelist breaks a chassis or two and perhaps a few propellers in the pursuit of the 'Scale Model,' he naturally tries to bring more inherent stability into his machine, and then he is well rewarded if it gains only half the duration of a 'flying stick,' by reason of its fine appearance in flight. (I have now in course of construction a tractor biplane with enclosed *fuselage* with a span of 4 ft. If this model is at all successful I shall be pleased to send you the drawings, as they may be of interest to some other readers.)"

A reply to some of the points raised by Mr. H. Sibley in our issue of December 24th is to hand from "Scale Model," as follows:—

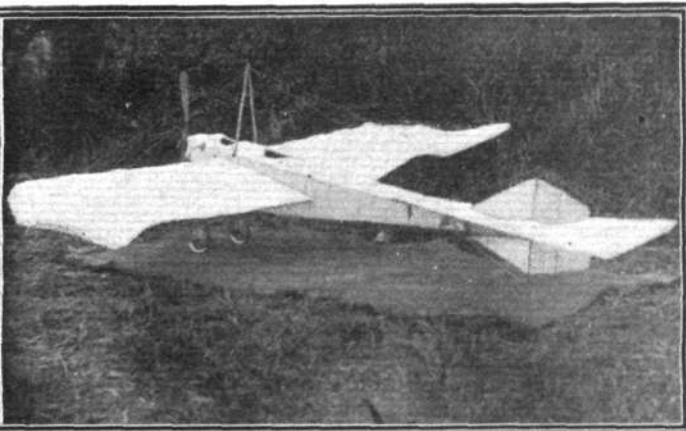
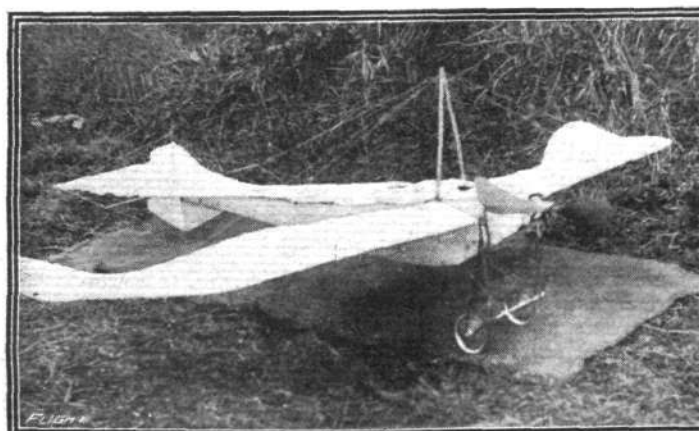
"After reading Mr. Sibley's interesting letter, one can only come to the conclusion that he takes most pleasure in obtaining duration; that seems to be his criterion of success. He sums up his conclusion by saying that 'the greatest factor in model work, and full size too for that matter, is motive power.' That, I contend, is the wrong attitude to take up. What would be far more useful would be to try and get the best out of a machine built within certain restrictions as to surface, weight lifted, power, &c. If the designers of full-sized machines were to specialise on one quality only—for instance, speed—they could produce a machine which would do marvels in that direction, but it would be absolutely impracticable for any useful purpose.

"Mr. Sibley, too, seems to mix up experimental model flying with model competition. Those are two separate and distinct spheres of work which have very little in common, and in my original letter I was referring only to the latter. At the same time, Mr. Sibley is quite wrong in his disparagement of experimental model work. He need only look at the reports of the Advisory Committee for Aeronautics to see that. Valuable data has been and is still being obtained by the scientific testing of models. That is, however, entirely different to model competitions. One might as well compare a model yacht race with the work done with models in the William Froude Memorial tank."

## A Model Taube.

Mr. David Hay writes from Denny, Scotland, as follows:—

"I enclose two photos. of my Etrich Taube, which was built from drawings which appeared in 'FLIGHT.' Length, 5 ft.; span, 5ft. 9 ins. propeller, 16 ins. diameter; wheels, 2½ ins. diameter; fitted with pilot's and passenger's seats; and all parts workable, all planes double surfaced. I made the model for Christmas, and took the photos. before doping the machine, as I had an idea that the dope would change the colour of same. It took me three months to complete, but I made some flying models in between that time; I think that is the best way when making such a model. I can get a good ¼ mile out of my twin-propeller monoplane, which is flying nearly every Saturday. I must say that 'FLIGHT' is the only paper that is worth reading on such a subject."



Two views of Mr. Hay's scale model Taube referred to above.

## LEGAL INTELLIGENCE.

The Blériot Manufacturing Aircraft Co., Ltd.

AT Bow Street Police Court, on December 29th, before Mr. Hopkins, Harry John Lawson, John Henry Swinburn, and C. W. Langford were summoned for failing to file with the Registrar of Companies a return of the allotments of shares made by the Blériot Manufacturing Aircraft Co., Ltd.

Mr. G. W. H. Jones, who appeared in support of the summonses, stated that the defendants were directors of the company, and the proceedings were taken at the instance of Mr. Cassells, a shareholder. The company was promoted by the Army and Navy Contract Corporation, Ltd., the whole of the shares in which were in the name of Lawson. The Blériot Company was incorporated on May 19th, and, although it was formed for the purpose of going to the public, it was first registered as a private company, counsel's submission being that the object of this was to deprive the shareholders in the public company of those safeguards to which they were entitled. Three days after the incorporation there was a meeting of seven solicitors' clerks, who were the signatories, and the company was converted into a public company. On June 14th a resolution was passed to increase the capital to £200,000—190,000 ordinary £1 shares, carrying 10 per cent., and 200,000 deferred shares of 1s. each. There were offered to the public 95,000 ordinary shares and 100,000 deferred 1s. shares. The original directors of the Blériot Company were the Duke of Manchester, Admiral the Hon. Sir E. R. Fremantle, Sir Algernon Guinness, Bt., Mr. W. A. Casson, and Mr. Swinburn.

"As to the Duke of Manchester," said Mr. Jones, "I don't know, but Admiral Fremantle and Sir Algernon Guinness were quite independent of the promoters." Continuing, he said the objects of the company were to acquire and extend the well-known business of Mr. Blériot, and supply aeroplanes to the order of the Government. The company acquired Mr. Blériot's rights for £100,000, payable £30,000 in cash, £43,000 in £1 shares, and the balance in cash or shares at the option of the promoters. It was provided that the promotion syndicate should nominate two directors. The whole of the money was subscribed by the public, with the exception of 100,000 of the deferred 1s. shares—a total of something like £95,000. Certain payments were made by the company to the promotion syndicate, after which Mr. Blériot refused to complete his contract, and the corporation started an action against him for specific performance.

Mr. Jones added that Admiral Fremantle and Sir Algernon Guinness resigned, and from that time onwards the defendants had been pressed to make a return of the allotments in order that a meeting of shareholders might be called, but they had not done so.

Admiral Fremantle gave evidence that he resigned his directorship on July 23rd, and he believed the allotments were then complete. He afterwards wrote a letter to the secretary, asking that the shareholders should be called together and their money returned.

Mr. H. H. Curtis Bennett, counsel for the defence, submitted that, although technically there might have been an offence, the prosecution was not a *bona-fide* one, but was the outcome of a private quarrel between the directors of this company. The reason the return had not been made was because of the difficulty of getting work of this kind properly done at the present time.

Mr. Hopkins said he would take into account the fact that no proceedings had been taken by the Board of Trade, who were the prosecuting body. He fined each of the defendants £10, and also ordered the payment of £15 15s. costs.



### PUBLICATIONS RECEIVED.

*The British Dominions Year Book, 1916.* The British Dominions General Insurance Co., Ltd., 1, Royal Exchange Avenue, E.C.

*Almanack, 1916.* The Aircraft Supplies Co., 17, John Street, Theobalds Road, London, W.C.

*Almanack, 1916.* Harrison, Jehring and Co., Ltd., Emerald Street, Theobalds Road, London, W.C.

### Catalogue.

*Radiators.* Motor Radiators, Ltd., Hanway Street Works, Oxford Street, W.



### Removing Wounded by Aeroplane.

WRITING in *Le Journal* on Monday regarding the retreat of the Serbian Army across the Albanian mountains, M. Henry Barby states that after the motor cars and other vehicles had been destroyed so that they should not fall into the hands of the enemy, Colonel Fournier, chief of the French mission, decided to utilise six aeroplanes to convey some of the wounded to Skutari.

Although for a period of two-and-a-half months they had been

exposed to snow and rain, the sick, who were unable to go any further, were placed in the machines and taken to Skutari, the experiment succeeding admirably.

### Fatal Accident at Gosport.

AN inquest was held at Gosport on December 30th relative to the death of Lieut. William Frederick Rogers, of the R.F.C., who was killed in an accident near Fort Rowner on the previous Tuesday morning. According to the evidence, the machine, when only about 130 ft. high, commenced to turn to the right without banking; it then dived suddenly to the ground. The deceased officer had done a good deal of flying, but it was his first trip on the particular type of machine with which the accident occurred. On being taken from the wreck, the pilot was dead. The jury returned a verdict of "Accidental Death."

### Invention in 1915.

IN a review of the year Messrs. Hughes and Young, of 55-56, Chancery Lane, London, W.C., point out that during the past twelve months a large number of applications for patents have related to aeronautics, while a number of inventions have been designed to afford protection against Zeppelin raids. The number of applications for patents has dropped from about 30,000 to 18,000, and Messrs. Hughes and Young point out that it is a striking fact that a considerable number have been filed by Germans.

### Shell Motor Spirit and the F.S.F.

ATTENTION may be drawn to the fact that the Flying Services Fund is still open, and among the latest donations, as may be seen from the official notices of the Royal Aero Club, on page 10, is one of £250 from the proprietors of Shell Motor Spirit.

### An Echo of the Raids.

CLAIMS amounting to £1,800 have been made for damage arising out of the anti-German riots in Newcastle in May. The Watch Committee propose to pay one-half of this amount.

### National Treasures and Aircraft Raids.

A CONFERENCE was recently held at the Office of Works, which was attended by representatives of the Admiralty and the War Office, and to which the directors of the great museums and art galleries were invited, to consider whether any further steps could be taken to safeguard national monuments against aircraft raids. The naval and military experts present unanimously agreed that no public building could by any structural device be protected against attack by bombs. Steps have, however, been taken to protect as far as possible the chief art treasures of the country.

The care of ecclesiastical buildings actually in use was specially excluded from the control of the Office of Works under the Ancient Monuments Consolidation and Amendment Act, and all responsibility devolves on the Dean and Chapter or other ecclesiastical authority.



### Aeronautical Patents Published.

Applied for in 1914.

Published January 6th, 1916.

24,084. T. CONSTANTARAS. Aeroplanes, hydroplanes, &c.

Applied for in 1915.

Published January 6th, 1916.

300. T. H. TESSIER. Mounting of quick-firing guns, &c., on aerial machines.

1,803. W. WESTWOOD AND R. PLAYER. Ties for Aeroplanes.

11,280. F. T. TUCKER. Automatic stability devices.

## FLIGHT.

44, ST. MARTIN'S LANE, LONDON, W.C.

Telegraphic address: Truditur, London. Telephone: 1828 Gerrard.

### SUBSCRIPTION RATES.

"FLIGHT" will be forwarded, post free, at the following rates:—

UNITED KINGDOM.

ABROAD.

	s.	d.		s.	d.
3 Months, Post Free...	1	8	3 Months, Post Free...	2	9
6 " " " " " "	2	9	6 " " " " " "	5	6
12 " " " " " "	6	6	12 " " " " " "	11	0

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 44, St. Martin's Lane, W.C., and crossed London County and Westminster Bank, otherwise no responsibility will be accepted.

Should any difficulty be experienced in procuring "FLIGHT" from local news-vendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.